# AT&T

605
Business
Communications
Terminal

User's Guide

# AT&T

# AT&T 605 BCT Terminal
# User's Guide
## 999-300-299IS Issue 1

## Addendum

This addendum contains updated information for the AT&T 605 BCT Terminal User's Guide (Issue 1, 999-300-299IS)

Ignore the instructions in Step 3 of Table 10-1, as illustrated below.

**Table 10-1**   Power On Test

| Step | Action | Yes | No |
|---|---|---|---|
| 1 | Turn on power. | | |
| 2 | Did the "605 OK Copyright 1987, AT&T" message appear? | Go to Step 9. | Go to Step 3. |
| 3 | Depress the left Ctrl key with both Shift keys depressed. Did the keyboard bell sound? | Keyboard O.K. Go to Step 4. | Keyboard self-test failed. Report as keyboard trouble. |

Step 3 is replaced with the following **User Initiated Keyboard Test**.

Depress and hold down both "Shift" keys, then depress the left "Ctrl" key. After the depression of the left "Ctrl" key, immediately release all the keys.  Listen for the test tone. No tone heard; replace the keyboard.

Should the "ERROR: Kybd" message appear; power the terminal down, and then power-up the terminal. If the "ERROR: Kybd" message does not reappear, the keyboard need not be replaced.

# 605 Business Communications Terminal User's Guide

## To Order Copies of This Guide

## FCC WARNING STATEMENT

# IMPORTANT SERVICE INFORMATION

Dear Customer:

The following information is provided to allow us to better meet your service needs. This information should be retained and the directions followed as indicated.

In Case of Trouble

Refer to Chapter 10 entitled "Maintenance" and follow the instructions.

In the event that you have a problem with your unit and need to have it repaired, contact either of the following AT&T Information Systems Service Organizations.

When your terminal is connected to an AT&T processor, contact the National Software Support Center (NSSC) on:

## 1-800-922-0354

When your terminal is connected to a non-AT&T processor or host, contact the Customer Service Support Organization (CSSO) on:

## 1-800-242-2121

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# Chapter 1: Introduction
## Contents

# Overview

This document provides the user with the information necessary to understand the operation of, and the user support for, the 605 Business Communication Terminal (BCT).

A step-by-step installation procedure is provided in this guide.

Initially the user is not expected to have a working knowledge of this terminal or the system in which it is going to operate. It is suggested that each user have an outline of the system operation and a copy of this User's Guide.

The 605 BCT functions as an interactive, character-at-a-time keyboard/display terminal which is designed to operate with the 3B processors, *UNIX** PC Workstations, AT&T WGS6386, WGS6312, "386" computers, and other *UNIX** hosts.

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* *UNIX* is a trademark of AT&T
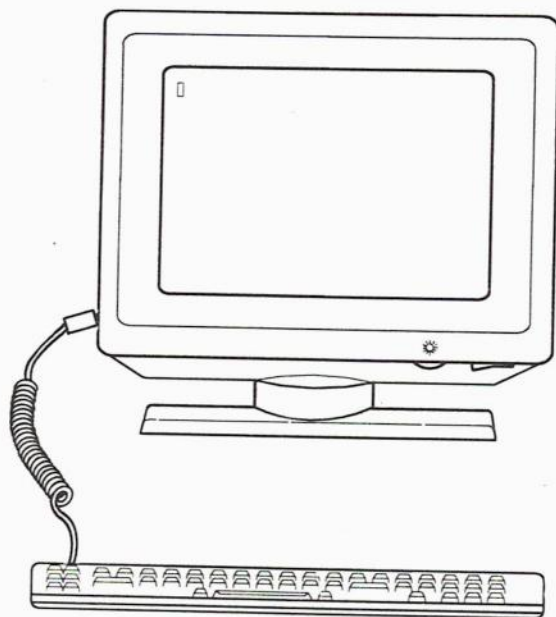
**Figure 1—1**   605 BCT

| Component | P.E.Code |
|---|---|
| Display and Keyboard | 3344-605 Col 19 (amber) |
| | 3344-605 Col 01 (green) |

# Important Reminders

1 Read your *605 Business Communication Terminal User's Guide* before using your terminal.

2 After turning your terminal off, allow a few seconds to pass before turning it on again.

3 **NEVER** unplug your 605 BCT or remove power from it until you have turned it off.

4 Protect your terminal from:

| | | |
|---|---|---|
| Heat | Cold | Vibration |
| Chemicals | Grime | Static Electricity |

5 When used with the 605:

- The 455 printer must be optioned for 8th bit spacing.

- The 475 printer must be optioned for 8 data bits and parity = "none".

- The 458 printer must be optioned for 8 data bits and parity = "off".

6 Special cabling must be used when connecting the terminal directly to a 3B5, 3B15, or a 3B20 host. Refer to Appendix B for cable numbers.

# Chapter 2: Terminal Features

## Contents

# Overview

Your model 605 BCT is AT&T's basic asynchronous display terminal with features and functionality that are compatible with AT&T's line of 3B processors, AT&T WGS6386, WGS6312, "386" computers, and peripherals.

It has three display states : Interactive, Setup, and Self-test. When in the Interactive state, all data received is directed to the screen and escape sequences are interpreted as described in Chapter 7 of this manual. In the Setup state, the screen is active as described in Chapter 5 of this guide. The Self-test state is described in Chapter 10 (Table 10-1) of this guide.

The 605 BCT Terminal communicates asynchronously character-at-a-time only (from the keyboard) on-line. Keyboarded data will be displayed only if the data is echoed back (local or remote) to the terminal. The 605 BCT utilizes the ANSI (American National Standards Institute) 3.64 line standard where applicable.

Your terminal operates in Full Duplex (FDX) on a point-to-point private line or switched network. It requires the use of an Electronics Industries Association (EIA) data source.

An auxiliary EIA printer may be connected to the terminal providing for hard copy of data.

There are two operating modes for the terminal, Normal Terminal mode and PC mode. The terminal may be selected in the Setup state or via an escape sequence.

# Features

The 605 BCT Terminal is designed with AT&T processors and small systems in mind:

- Amber or green nonglare 14-inch diagonal display.

- Smaller footprint, styling, and ergonomic design providing visual as well as functional compatibility with the *UNIX** PC console.

- Six character sets, including a PC font that support various character attributes.

- A detached low profile 102-key keyboard for general purpose use.

- A bidirectional RS-232-C printer port allowing the user to control printer functions from the keyboard.

- Nonvolatile storage for options, screen labels, and associated character string.

- Transmission rates from 300 to 38,400 bps with asynchronous character-at-a-time transmission from the keyboard.

- Set of eight user and host programmable function keys with associated screen labels.

- Set of fourteen System Function keys operable in both the Shifted or Unshifted mode.

- Supports an external data set that can be placed up to 50 feet from the display.

- PC Terminal mode which sends keyboard scan codes to the line and displays 8-bit characters from a special PC font on a screen consisting of 25 scrolling lines.

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\*    UNIX is a trademark of AT&T

# Modes

## Normal Mode

When operating the terminal in Normal Terminal mode, the screen consists of 24 scrolling lines, one status line and two screen label lines. Data received from the line or local data from the keyboard (if local echo is "on") is displayed on the 24 scrolling lines.

When the receive buffer becomes approximately half full, a DC3 is sent to the line as an XOFF character. When the buffer empties to the 10% full point, a DC1 is sent as an XON character. XOFF and XON are used to control the flow of data from the host.

One of five character sets may be selected to display data on the 24 scrolling lines. The default United States character set is always used on the status line.

Control characters and escape sequences are used to instruct the terminal to perform special functions. If the terminal is in Monitor mode, the control characters and escape sequences are displayed rather than acted on.

The terminal options control the general operation of the terminal and may be changed in the Setup state or via escape sequences.

The keyboard is used to send data to the host or to perform certain local functions.

## PC Mode

When one of the PC Terminal Mode options (XT, AT1, or AT2) is selected, the 605 operates as an XT or AT compatible terminal. This is called PC mode.

In PC mode, the terminal transmits scan codes that are interpreted by the host PC. The host PC then transmits responses using 8-bit ASCII codes. These codes are displayed using characters from a 256 code PC character font.

While in PC mode, the screen consists of 25 scrolling lines with lines 26 and 27 being blank. There are no screen labels on the screen.

The terminal can be used in three PC modes. The scan sets sent in these modes correspond to those used with AT and XT compatible computers. The three PC modes are: XT, AT1, and AT2. They can be accessed by option selection or by escape sequence.

A delay of 250 ms must be allowed after entry or exit from the PC mode.

Upon entering or leaving PC mode the terminal is reset and the Caps Lock, Scroll Lock, Num Lock and Alternate Keypad modes are reset to their default states.

A 256 character PC font set is accessible by presenting an eight-bit code to the terminal (see Tables C-6 and C-7 in Appendix C). When the eighth bit is cleared, the characters from 00 Hex through 7F Hex are displayed. Setting the eighth bit provides access to characters 80 Hex through FF hex.

Control functions that correspond to codes 00 Hex through 1F Hex are performed when Monitor mode is "off". With Monitor mode "on", the characters at those font locations are displayed. The PC font is available exclusively in the PC mode. Escape sequences for character set selections are disabled in this mode.

The local functions: print on line, print screen, and scroll lock do not function while in PC mode. The key combination for entry into Setup is to depress F1 while the left Cntl and the left Alt keys are held down. Setup is exited in the same manner.

While in PC mode, certain options are ignored. Keyed codes are not echoed locally to the display regardless of the Local Echo option. Labels are not displayed. Parity is not set or checked. The Swap Delete/Del option is ignored. These options display "N/A" on the SET-UP screen when in PC mode.

Escape sequences that request terminal status, hardware configuration, software configuration, upload of options, cursor position, and printer status are ignored while in the PC mode. Escape sequences dealing with Alternate Keypad mode, and device reset are also inoperative. The select screen labels sequence affects the set of labels to be displayed when returning to Normal mode. The escape sequences to enter and exit Monitor mode are different when in PC mode.

While in XT or AT1 mode, the XOFF character is Hex 67 and the XON character is Hex 65. Flow control is not sent when in AT2 mode.

# Chapter 3:  Unpack and Install

## Contents

# Overview

This section provides information for unpacking and installing your 605 Business Communication Terminal (BCT).

## Site Selection

Where you place your terminal is a personal preference. However, the following requirements must be considered:

- Display/Controller Size    12 3/4 inches wide
  12 3/4 inches deep
  15 3/4 inches high

- Keyboard Size    1 1/5 inches high at the home row
  (tilt legs not extended)
  7 3/8 inches deep
  20 1/2 inches wide (102-key keyboard)

- Power Requirements    A 90 to 132 Vac 60 Hz outlet is needed. A 6 foot 7 inch power cord is supplied with the monitor. Before making any power connection, make sure that the outlet is properly grounded.

- Environment    Office-like environment that is free of excessive humidity, dust, and smoke. The terminal may be operated at temperatures between 40 degrees F (4.5 C) and 105 degrees F (40 C).

- Cable Length    The maximum recommended cable length for the cables connected to the terminal's main or auxiliary ports is 50 feet.

# Unpacking and Installing

Observe any and all **Caution** and **Warning** labels on the cartons.

Follow these procedures when unpacking:

- Before unpacking, confirm order with unit code marked on the carton.

- Select an area near the installation site to unpack the box to avoid damage to the terminal while it is being transported.

- Unpack the carton carefully.

Each of the following will be shipped in a separate carton:

- Terminal (Display, Base and Keyboard)

- Modem Cable (if present)

- Optional Printer (if present)

- Optional Modem (if present)

  **Note:** To avoid condensation on the electronic components, the components should be allowed to assume room temperature before unpacking.

1 Position the terminal box in accordance with instructions on the outside of the carton indicating which side should be up. The User's Guide, the ac cord, and the keyboard are in the carton with the terminal.

2 Remove the keyboard from the carton and place it at the location where the terminal is to be installed.

3 Remove the terminal from the box, and place it at the terminal location. Connect the female end of the power cord (found in box with terminal) to the ac connector on the back of the display.
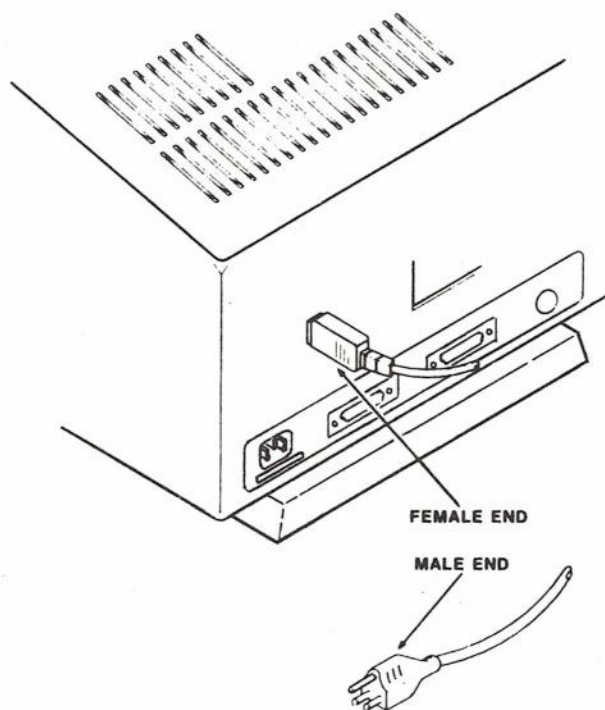
FEMALE END

MALE END

**Figure 3–1**   AC Connection

4 Check that the ac power switch (on front) is off (refer to Figure 3-2). Insert male end of cord into the power outlet.
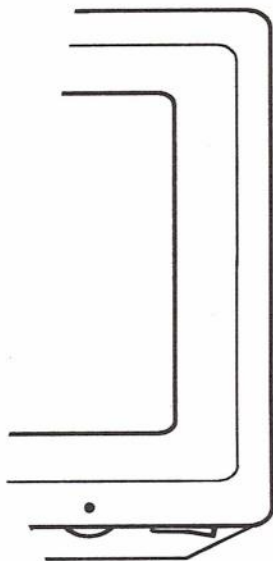


**Figure 3—2**   Off Position of Power Switch

5 Remove keyboard from box and styrofoam pack.

6 Remove the plastic bag.

7 Insert the keyboard connector into the receptacle in the rear of the terminal.

8 When an external modem is to be used, unpack the modem cable (ordered separately), and connect the cable to the main port of the terminal and the modem.  Secure the ends of the cable with the screws that are part of the connectors.  Refer to Appendix B for cable lengths and part numbers used to connect the terminal to a modem.

7   When an optional printer is to be used, unpack the printer
    cable (ordered separately), and connect the cable to the
    auxiliary port of the terminal and the printer. Secure the ends
    of the cable with the screws that are part of the connectors.
    The cable for the 455 Printer is included with the printer. Refer
    to Appendix B for the cable lengths and part numbers used for
    the 458, 475, 5310 and 5320 Printers.

8   After the terminal has been assembled refer to Chapter 4
    entitled "Getting Started."

# Chapter 4: Getting Started

## Contents

# Overview

This section provides information for adjusting the viewing angle, applying power to the 605 BCT, and transmitting data to the line (and the display).

## Adjusting The Viewing Angle

The screen on your terminal can be manually tilted through an angle of approximately twenty (20) degrees. It may also be manually swiveled from side to side through an angle of approximately ninety degrees.

## Applying Power

After the terminal has been connected to a properly operating 115 Vac 60 Hz power source, press the right side of the "ON/OFF" switch upward (refer to Figure 1-1.). Within 15 seconds the cursor should appear as optioned (block or underscore, blinking or nonblinking). It may be necessary to adjust the brightness control (rotate the brightness control clockwise to increase, counter clockwise to decrease).

Lines 26 and 27 contain the reverse video pads for the screen labels. These labels correspond to eight "F" keys (F1 through F8) across the top of the keyboard. The screen labels will be displayed if the terminal is in Normal mode and the "Labels" option is set to "on".

A message indicating the operability of the terminal will appear on the 25th line. When this message is other than "605 OK Copyright 1987, AT&T." take corrective action as described in Chapter 10 of this manual. The message will disappear when a keyboard key is depressed or if a character is received.

Status indicators may appear in one of the six positions on lines 26 and 27 between the F4 and F5 screen-labels.

Some of the status indicators share the same position on the screen, and therefore, not all of the indicators can be displayed at the same time. The 605 BCT is capable of displaying the status indicators shown in Table 4-1.

**Table 4—1**   Status Indicators

| Indicator | Description |
|---|---|
| on | Terminal on-line |
| ins | Insert mode on |
| pl | Print On-line |
| mc | Media Copy |
| ps | Print Screen |
| lok | Keyboard Lock |
| alt | Alternate Keypad |
| cap | Caps Lock Enabled |
| scr | Scroll Lock Enabled |
| num | Num Lock Enabled |

## Sending/Receiving

Characters are sent to the line from the keyboard only in a character-at-a-time fashion. Characters are sent to the screen from the keyboard only when the remote host echoes data back to the terminal or the "Local Echo" option of the terminal is set to "on." When in PC mode, only data from the host is displayed.

Characters received from the line will be displayed on the screen on lines 1 through 24 or lines 1 through 25 in the PC mode. The ASCII character "SUB" is displayed to indicate a character was received with a parity error. Received escape sequences, control characters, and the delete character will not be displayed unless the "Monitor Mode" option is set to "on." Destructive scrolling will take place when a line feed, vertical tab, form feed, index sequence, or a new line sequence is received with the cursor in the last line of the screen or scrolling region. Destructive scrolling will also occur when, with the "Autowrap" option "on" and the cursor in the last character position of the screen or scrolling region, additional characters are received that would cause the line to overflow. With the "Autowrap" option "off," the most recently received character will be displayed.

With the "Local Echo" option "on," data received on the screen from the line may become mixed with data sent from the keyboard.

The 605 BCT is equipped with a "screen saver" feature that blanks the display when no characters have been sent, received, or typed on the keyboard for one hour. The screen will be viewable again when any key is depressed (that keystroke will not be sent on line) or data is received from the line.

# Chapter 5:  Terminal Setup

# Contents

# Overview

This section contains the procedure for changing the options and User Fkey strings of your terminal.

The 605 BCT has three sets of options: default options, saved options, and active options. The default options are permanent and unalterable. The saved options are user alterable and are saved in nonvolatile memory. The active options are also user alterable but are stored in volatile memory.

Normally, the terminal powers up with the saved options active. If these have been corrupted, the default options will be active on power up.

The terminal options menu allows the user to make either the default or saved options active, to modify active options, and to save the active options. Even if the active options are not saved after being modified, the modified options will be in effect when Setup mode is exited. However, when a power cycle occurs, the saved options will again become active.

The User Fkeys have only default and saved values.

# Accessing the Terminal Options Menu

The terminal options menu is accessed by pressing the Setup key (F1) with the Ctrl (Control) key depressed while in Normal mode or by pressing the Setup key with the left Ctrl and left Alt keys depressed while in the PC mode. These options control various terminal actions and are presented in an English menu format that makes changing options as easy as depressing a key.

Upon entering the Setup mode, data on the screen will be cleared (including the status line, line 25). On the top line, the title "OPTIONS SETUP" will appear in single high double wide characters. The version number will appear in the bottom right corner, representing the version of firmware resident in the terminal, as shown in Figure 5-1.

The Cursor Control keys are active and are used to move the cursor to the desired field in the OPTIONS SETUP screen.

To move from any of the SETUP screens to the INTERACTIVE screen, depress the Setup key with the Ctrl (Control) key depressed if in Normal mode. In PC mode, depress the Setup key with the left Ctrl and left Alt keyes depressed. Upon exiting the Setup mode the Fkey labels will be restored to what they were when entering the Setup mode if the Terminal mode was not changed. If User Fkey labels are displayed, they will reflect any change made to them while in the Option Setup mode. The screen will be cleared, the cursor homed, and the screen will reflect the selected values of Reverse Video, Columns, Cursor Type, Cursor Blink, and Labels. The split screen region, Origin mode on or off, the definitions of G0 and G1, the active character set, the character attributes, and the cursor save/cursor restore values are restored to the values they had on entering the Option Setup mode if the Terminal mode was not changed. Media Copy and Print On-Line are turned off.

Refer to Chapter 6 for descriptions of the screen-labeled keys associated with the SETUP screens.

Terminal options, User and System Fkey strings, and their associated labels can be changed by a host through the use of escape sequences.

Keyswitches should not be depressed while executing a keyboard self test.

```
                              OPTIONS SETUP
         COMMUNICATIONS                      USER PREFERENCES

         Speed               1200       Columns             _80_
         Send Parity         none       Reverse Video       _no_
         Check Parity        _no_       Bell                _on_
         Local Echo          _off       Key Click           _off
         Monitor Mode        _off       Scrolling           jump
         Autowrap            _on_       Scroll Speed        med_
         Newline on LF       _no_       Cursor Type         blck
         Return Key          _CR_       Cursor Blink        _no_
         Enter Key           <- ...     Labels              _on_
         Terminal Mode       norm       Swap Delete/Del     _no_




  DONE                                                  605 BCT - 1.0
  +-------+-------+--------+--------+  +-------+------+-------+--------+
  |       |       | CHANGE |DEFAULT |  | SAVED | SAVE | NEXT  | CLEAR  |
  |       |       | OPTION |VALUES  |  | VALUES|      | SETUP | TO END |
  +-------+-------+--------+--------+  +-------+------+-------+--------+
```

**Figure 5–1**   Terminal Options

___

**Note:**   The default values are shown for all options. The option
names and values are displayed in normal intensity. The
current option name, value, and cursor location will be in
reverse video.

## Changing Options

To change an option, the following steps should be taken:

1 Depress the Setup key (F1) with the Ctrl (Control) key depressed to access the terminal options while in Normal mode or depress the Setup key (F1) with the left Ctrl (Control) and left Alt key pressed while in PC mode.

2 Use the cursor positioning keys to move the cursor to the option to be changed.

   **Note:** The cursor moves field to field and not position to position.

3 Depress the CHANGE OPTION screen-iabeled key to step the option through its selectable values.

   **Note:** The "ENTER" key option requires keyboard entered characters.

4 Depress the SAVE screen-labeled key to store the currently displayed values for the options.

5 Exit the Setup mode by depressing the Setup key (F1) with the Ctrl (Control) key depressed while in Normal mode or by depressing the Setup key (F1) with the left Ctrl (Control) and left Alt key depressed.

The DEFAULT VALUES screen-labeled key changes all options back to their default values. The SAVED VALUES screen-labeled key changes all the options to the values that are stored in memory from the last SAVE key depression.

Depressing the SAVE screen-labeled key stores the currently displayed option values in memory.

Depressing the NEXT SETUP screen-labeled key will cause the USER Fkey SETUP screen to be displayed.

Depressing the CLEAR TO END screen-labeled key while the cursor is in the "ENTER KEY" option field will clear the field of displayed characters from the cursor to the end of the string. The blank spaces in the field will be indicated by "dots" displayed for each character position.

Depression of the screen-labeled keys DEFAULT VALUES, SAVED VALUES, or SAVE will cause the message "DONE" to be displayed at the bottom left corner of the options screen. "DONE" will be erased when any key except Shift, Ctrl, Caps Lock, or Alt is depressed.

# Option Descriptions

## COMMUNICATIONS OPTIONS

| Option | Selections | Description |
|--------|-----------|-------------|
| Speed | 300<br>1200*<br>2400<br>4800<br>9600<br>19.2<br>38.4 | This option defines the operational speed of the terminal. When on-line, the speed selection must be identical to the operational speed of the remote sender/receiver. The AUX port also operates at the selected speed. |
| Send Parity | even<br>odd<br>mark<br>spac<br>none * | This option determines what state the 8th bit of sent data will be. If even or odd is selected, the 8th bit will be sent to reflect the selected parity. If mark (1) or space (0) is selected, the 8th bit will be sent as selected. If none is selected, the 8th bit will be sent as space. When in PC mode, parity is not sent. "N/A" is displayed on the Setup screen. |
| Check Parity | yes<br>no* | This option determines whether received data is compared to the Send Parity option. If "yes", errored characters are replaced by SUB characters (SB); if "no", received data parity is ignored. When the terminal is in Monitor mode, or if Send Parity is set to "none", received parity will not be checked. Received parity is not checked when in PC mode. |

\* Denotes the default values.

| Option | Selections | Description |
|--------|-----------|-------------|
| Local Echo | off*<br>on | If "off", keyboarded data is sent to the line only and must be echoed back by the remote receiver to be seen on the terminal. If "on", keyboarded data will be sent to the line and to the display at the same time. Characters received from the line may be intermixed with keyboarded data resulting in incorrect data strings. When in PC mode, keyed data is never locally echoed to the display; "N/A" is displayed on the Setup screen for this option. |
| Monitor Mode | on<br>off* | If "on", received escape sequences and control characters will be displayed but not acted on. LF, VT, and FF will be displayed and then acted on as newline (CR/LF). If "on", the terminal will do an autowrap when the cursor is in the last column and data is received. The control characters SI and SO will not be operational to move in and out of G0. When this option is "off", all control characters except CAN and SUB are not viewed. |
| Auto Wrap | on*<br>off | If set to "on", data received at the right margin will be preceded by a locally generated newline. If "off", received data will overprint at the right margin until a newline is received, except when in Monitor mode. |
| Newline on LF | yes<br>no* | This option determines if the cursor moves to the beginning of the next line ("yes") or to the next line in the same column ("no") on receipt of a linefeed character. |

| Option | Selections | Description |
|--------|-----------|-------------|
| Return Key | LF<br>CR*<br>CRLF | This option determines if CR or LF or CR/LF is sent when the Return key is depressed. |
| Enter Key | (Up to 4 characters)<br>CR* | This option allows for up to four ASCII characters to be entered that will be sent when the Enter key is depressed. |
| Terminal Mode | norm*<br>XT<br>AT1<br>AT2 | This option provides four modes of operation. A Normal mode is provided for standard ASCII transmission. In addition, three PC modes (XT, AT1, AT2) are provided in which the keyboard will generate unique hex codes (scan codes) for each key depression and release (make and break). These scan codes are depicted in Tables F-1, F-2 and F-3 respectively. |

\* Denotes the default values.

## USER PREFERENCE OPTIONS

| Option | Selections | Description |
|---|---|---|
| Columns | 80*<br>132 | This option determines the number of columns in the display. The OPTIONS SETUP screen is always displayed in the 80 Column mode regardless of this option. |
| Reverse<br>Video | yes<br>no* | If set to "yes", the entire screen will become light with dark characters when not in SETUP; if set to "no", the entire screen will be dark with light characters. |
| Bell | on*<br>off | This option controls the bell. The choices are "off" and "on". When optioned for "off," the bell is inaudible. When optioned for "on," a BELL character received from the line or echoed locally will cause the bell to ring. |
| Keyclick | on<br>off* | This option determines whether or not the keyboard will generate an audible click when a key is depressed. |
| Scrolling | jump*<br>smth | This option is used to indicate to the terminal whether vertical scrolling should be "smooth" or "jump". |

* Denotes the default values.

| Option | Selections | Description |
|--------|-----------|-------------|
| Scroll Speed | med*<br>slow<br>fast | This option determines the rate of "smooth" scrolling text. This option does not apply to "jump" scroll. |
| Cursor Type | line<br>blck* | If set to "blck", the cursor will appear as a rectangle; if set to "line", the cursor will appear as an underscore. |
| Cursor Blink | yes<br>no* | If set to "yes", the cursor will alternate between being normal and half intensity (blinking); if set to "no", the cursor will remain in a visible, nonchanging state. |
| Labels | off<br>on* | If set to "on", the function key screen labels will be displayed when the terminal is in the Normal Operational mode; if set to "off", the labels will not be displayed. If the terminal is in SETUP, the function key screen labels are displayed regardless of the option selection. If currently "off" and Fkey keys are downloaded from a remote host, this option will be changed to "on".<br><br>When in PC mode, labels are not displayed (except in Setup) and "N/A" is displayed on the Setup screen for the labels option. |
| Swap Delete/Del | yes<br>no* | If set to "yes", the Del Ln Delete/Del key in the Unshifted mode sends the control character De to the line; in the Control mode, the key sends the sequence "ESC [ P" on line. If set to "no" the unshifted Del Ln Delete/Del key sends the sequence "ESC [ P" on line; in the Control mode the key sends the control character DEL to the line. When in PC mode, scan codes are sent a "N/A" is displayed on the Setup screen. |

# Options Record

The following list provides a place to record terminal options so that if the terminal should lose its operating options, you will be able to re-option the terminal. Default values are indicated by an asterisk (*).

| Speed | 300 ☐ | 1200* ☐ | 2400 ☐ |
|---|---|---|---|
| | 4800 ☐ | 9600 ☐ | 19.2 ☐ |
| | 38.4 ☐ | | |

| Send Parity | even ☐ | odd ☐ | mark ☐ |
|---|---|---|---|
| | spac ☐ | none* ☐ | |

| Check Parity | yes ☐ | no* ☐ |
|---|---|---|

| Local Echo | on ☐ | off* ☐ |
|---|---|---|

| Monitor Mode | on ☐ | off* ☐ |
|---|---|---|

| Autowrap | on* ☐ | off ☐ |
|---|---|---|

| Newline on LF | yes ☐ | no* ☐ |
|---|---|---|

| Return Key | LF ☐ | CR* ☐ | CRLF ☐ |
|---|---|---|---|

| | | |
|---|---|---|
| Enter Key | CR* ☐ | Up to 4 Characters ☐☐☐☐ |
| Terminal Mode | norm* ☐ | XT ☐ |
| | AT1 ☐ | AT2 ☐ |
| Columns | 80* ☐ | 132 ☐ |
| Reverse Video | yes ☐ | no* ☐ |
| Bell | on* ☐ | off ☐ |
| Keyclick | on ☐ | off* ☐ |
| Scrolling | smth ☐ | jump* ☐ |

| | | | |
|---|---|---|---|
| Scroll Speed | slow ☐ | med* ☐ | fast ☐ |

| | | |
|---|---|---|
| Cursor Type | line ☐ | blck* ☐ |
| Cursor Blink | yes ☐ | no* ☐ |
| Labels | on* ☐ | off ☐ |
| Swap Delete/Del | yes ☐ | no* ☐ |

# User Fkey Setup

The USER Fkey SETUP screen is accessed by depressing the NEXT SETUP Fkey while in the Setup mode. Figure 5-2 shows the the USER Fkey SETUP menu for this terminal.

The label field provides for up to sixteen characters to be entered that will be displayed as a screen label for that key when the User Fkey root key is depressed. The label is two lines of eight characters each.

The string can be up to thirty-five characters (control characters included) that can be commands, repetitive data, or anything that may be useful to have on a programmed key.

**Note 1:** The default labels and strings are shown in Figure 5-2. These are also the default values for the System Fkey strings.

**Note 2:** EC refers to the escape character.

**Note 3:** The strings display a dot for any NULL characters.

**USER Fkey SETUP**

Label    String

F1:    F1    E_COc ·····································

F2:    F2    E_COd ·····································

F3:    F3    E_COe ·····································

F4:    F4    E_COf ·····································

F5:    F5    E_COg ·····································

F6:    F6    E_COh ·····································

F7:    F7    E_COi ·····································

F8:    F8    E_COj ·····································

| PREVIOUS FIELD | NEXT FIELD | | DEFAULT VALUES | | | NEXT SETUP | CLEAR TO END |

**Figure 5–2**    User Fkey Setup

## Changing Fkey Labels and Strings

To change a label or string, the following steps should be taken:

1  Move the cursor to the beginning of the label or string to be changed with the cursor positioning keys or PREVIOUS FIELD or NEXT FIELD screen-labeled keys.

2  Enter the desired characters from the keyboard.

Depressing the DEFAULT VALUES screen-labeled key changes all labels and strings back to their default values (the default values are shown in Figure 5-2).

Depressing the NEXT SETUP screen-labeled key brings up the OPTIONS SETUP screen.

Depressing the CLEAR TO END screen-labeled key will clear the label or string of all characters from the cursor to the end of the label or string.

The labels and strings are stored when the USER Fkey SETUP screen is exited by depressing the NEXT SETUP screen-labeled key or the Set-Up root key (F1) with the Ctrl (Control) key depressed.

# Chapter 6: Keyboard

## Contents

# Overview

When in Normal mode, keyboard data is sent to the display (as well as on-line) when the option "Local Echo" is "on". When the "Local Echo" option is "off", keyboarded data is not sent to the display (sent to line only) unless the receiver (host) echoes the data back to the sender.

When in PC mode, scan codes from the keyboard are sent to the display. They are not locally echoed.

# Keyboard

The keyboard is divided into four groups of keys. The main group of keys is a standard typewriter arrangement with some additional keys.

The fourteen "F" keys across the top of the keyboard serve three purposes. They are used as root keys (root identifiers appear on the front of keys F1, F7, and F8), as screen-labeled keys (F1 through F8), or as function keys. These keys provide the user with access to the modes and features of the terminal and are described in detail in this section.

The ten keys immediately to the right of the standard keys are for cursor positioning and system control.

The eighteen keys at the right of the keyboard are for numeric data entry.

All keys on the keyboard repeat at approximately seventeen characters per second if they are depressed for more than one-half second except for:

| | |
|---|---|
| Setup (Ctrl-F1) | Clear (Shift-Home) |
| Disc (Ctrl-Page Up) | Reset (Ctrl-Page Down) |
| Home | Lc Clr (Ctrl-Home) |
| Caps Lock | Scroll Lock |
| Break (Ctrl-Scroll Lock) | StPrt (Ctrl-+) |
| 14 function keys | |

The keyclick will repeat on the keyboard as the characters repeat.

**Figure 6-1**  Keyboard Layout -- 102-Key Keyboard

# Standard Keys

The keys shown in Figure 6-2 identify the standard typewriter keys.
They function the same as a typewriter.  In the case of keys with
double legends ($\frac{\#}{3}$), the lower character (3) is generated in the
unshifted state.
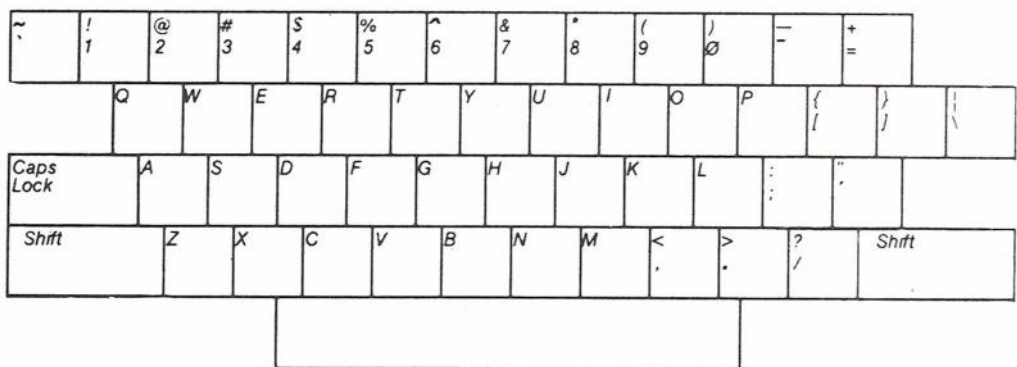


**Figure 6–2**   Standard Keys

Shift and Caps Lock modify standard key characters.  These keys are
described in the following paragraphs.

Depressing a standard key with Shift depressed in the Normal mode causes the uppercase alpha characters to be generated. In the case of keys with double legends ($\frac{\#}{3}$), the upper symbol (#) is generated.

When in PC mode, the Shift key causes the scan codes sent out to change sometimes. See Tables F1, F2, and F3 for a complete explanation of how the SHIFT key functions.

Depressing the Caps Lock key selects the Caps Lock mode and displays the "cap" indicator between the F4 and F5 screen labels. Alpha keys generate uppercase letters, but keys with double legends are not affected. They continue to generate the lower symbols. When this mode is disabled the alpha keys generate lowercase characters. In Normal mode, the terminal powers up with this key in the same state as it was when the terminal was powered down.

When in PC mode, the Caps Lock key is interpreted by the host. The keyboard continues to send the same scan codes after depression of Caps Lock. The "cap" indicator on the screen is toggled when the key is depressed. Caps Lock is off when powering up in PC mode. Caps Lock will retain its state in the Setup state unless the Terminal mode option is changed. If Terminal mode is modified either in Setup or by downloading or restoring options, the Caps Lock indicator will be cleared.

# Special Function Keys

The keys shown in Figure 6-3 identify the special function keys. When in Normal mode, these keys generate frequently used special characters or they enable special features.
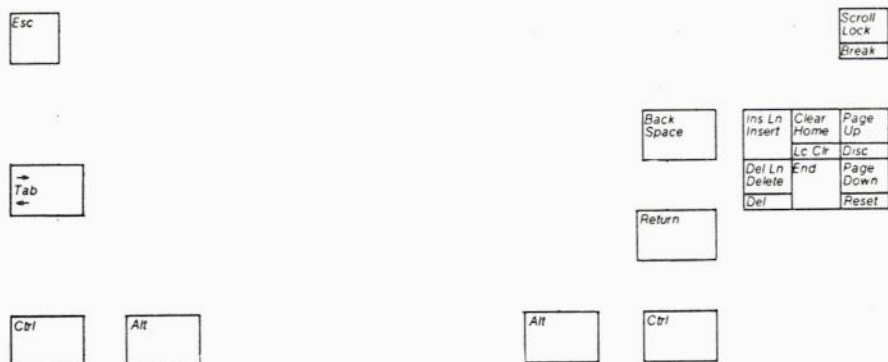


**Figure 6–3**    Special Function Keys

The special function keys and their associated functions in Normal mode are described in the following paragraphs.

When in PC mode, these keys send the codes described in Tables F1, F2, and F3. No local functions are performed.

## Esc Key

Depressing the Esc key generates the ASCII control character ESCAPE.
The ESCAPE character is used to begin control sequences that the
terminal and the host use to control their actions.

## Tab Key

Depressing the Tab key generates the ASCII character HT (Horizontal
Tab). With the "LOCAL ECHO" option "on" or when the remote receiver
echoes data back to the display, the cursor will move to the right to
the next preset tab stop (Monitor Mode option "off") or display the "➤"
character (Monitor Mode option "on"). Depressing this key with either
the Shift key or the Ctrl (Control) key depressed will generate the ASCII
escape sequence ESC [ Z. If data is sent to the display (local or
remote echo), the cursor will move to the left to the next preset tab
stop (Monitor Mode "off") or display ESC [ Z (Monitor Mode "on"). Tab
stops are set at eight column intervals beginning with column one.
This key does not cause the cursor to change lines.

## Ctrl Key

Depressing various keys while the Ctrl (Control) key is depressed
causes ASCII control characters to be generated or special functions
to be initiated.

## Back Space Key

Depressing the Back Space key generates the ASCII character BS
(Backspace). If data is sent to the display (local or remote echo), the
cursor will move one space to the left (Monitor Mode option "off") or
display the character (Monitor Mode option "on"). If the cursor is in
the first column, no movement will occur.

# Return Key

The Return key is programmable in the Setup mode. When depressed, it will generate either a Carriage Return (CR), Line Feed (LF) or a CR and LF. When data is sent to the display (local or remote echo), the cursor will either go to the first column of the present line (CR only), perform a line feed function (as optioned with NEWLINE on LF) (LF only), go to the first column in the next line (CR and LF), (Monitor Mode option "off") or the characters (CR, LF) will be displayed (Monitor Mode option "on"). With Monitor Mode option "on", a displayed CR will only display while a displayed LF will also perform a New Line (NL) function.

# Enter Key

The Enter key is programmable (up to four characters) in the Setup mode (refer to Optioning). Depressing this key will generate the optioned characters. When data is sent to the display (local or remote echo), the characters will appear on the display or local functions will be performed (if control characters) depending on the state of the Monitor Mode option.

# Scroll Lock/Break Key

Depressing the Scroll Lock/Break key selects the Scroll Lock mode that stops placing characters on the screen and signals to a remote sender to stop sending; depressing this key a second time, reactivates the screen and signals to a remote sender to resume sending. When Scroll Lock is in effect the display will not receive characters, even if the remote sender does not stop sending. Depressing this key with the Ctrl (Control) key depressed will cause a timed line break (transmit lead high (space) of approximately 280 ms to be generated.

# Alt Key

When the Alt key is depressed with the Terminal mode set to "norm", no action will be taken by the terminal and nothing will be sent to the line.

# Page Up/Disc Key

The Page Up/Disc key sends the sequence, "ESC [ V", on line. When this key is depressed while the Ctrl key is also depressed the terminal will turn off DTR for 2 1/2 seconds.

## Page Down/Reset Key

The Page Down/Reset key sends the sequence, "ESC [ U", on line.
When this key is depressed while the Ctrl key is depressed the
Terminal Reset sequence "ESC c" is sent on line. If the "ESC c"
sequence is received by the terminal, a terminal reset is performed.

## Clear Home/Lc Clr Key

The Clear Home/Lc Clr key sends the ANSI 3.64 code for Cursor Home
"ESC [ H" to the line. In the Shifted mode this key sends the sequence
"ESC [ 2 J" to the line, and in the Control mode, the key performs a
local clear screen function and nothing is sent to the line.

## End Key

The End key sends the sequence "ESC [ 24; 1 H" to the line, and if that
sequence is received, the terminal will position the cursor on line 24 in
column one.

## Del Ln Delete/Del Key

If the Swap Delete/Del option is set to "no", the Del Ln Delete/Del key
sends the sequence "ESC [ P" on line. In the Shifted mode, the key
sends "ESC [ M", and in the Control mode the key sends the control
character DEL to the line. If the Swap Delete/Del option is set to "yes",
the Del Ln Delete/Del key sends the control character DEL to the line.
In the Shifted mode, the key sends "ESC [ M, and in the Control mode,
the sequence "ESC [ P" is sent on line.

## Ins Ln/Insert Key

The Ins Ln/Insert key sends the sequence "ESC [ @" on line. In the
Shifted mode this key sends the line insert sequence "ESC [ L" to the
line.

# Cursor Positioning Keys

The keys shown in Figure 6-4 identify the cursor positioning keys. These keys, when depressed in the unshifted state, in the Normal Terminal mode, transmit the ANSI (American National Standards Institute) 3.64 code for the cursor positioning functions. When data is sent to the display (local or remote echo), the sequences will appear on the screen (Monitor Mode option "on") or the cursor positioning functions will occur (Monitor Mode option "off"). A single sequence with Monitor Mode "off" will cause one positioning movement (either a 1-column movement, or a 1-line movement) to occur in the direction shown on the keytop.

The control state of these keys (a cursor positioning key, with the CTRL key depressed) will send the scroll sequences to the host.

When in the PC mode, these keys send the Hex codes listed in Figures F1, F2 and F3.
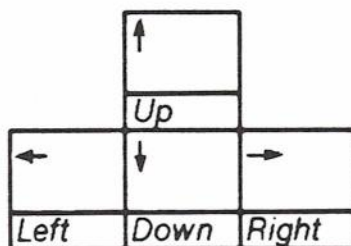


**Figure 6–4**   Cursor Positioning Keys

# Numeric Cluster Keys

In the Normal Terminal mode, the keys shown in Figure 6-5, will generate the ASCII characters shown on the keytops (except for the Enter key).

The print functions Print On-Line (PrtOn), Print Screen (PrtSc), and Stop Print (StPrt) will be enabled when those keys are depressed with the Ctrl (Control) key depressed.

The Enter key will generate an ASCII sequence (up to four characters) programmed in the Setup mode. The characters will be displayed if data is sent to the display (local or remote echo).

When in the PC mode, these keys send the Hex codes listed in Figures F1, F2 and F3. No local functions are performed.

When in the XT or AT1 PC mode, depressing the key labeled "(=/PrtSc" will toggle the "num" indicator indicating Num Lock. Refer to Tables F1 and F2 for a list of those keys whose scan codes are modified by Num Lock.



**Figure 6–5**    Numeric Cluster

# Function and Screen-Labeled Keys

In the Normal Terminal mode, the function keys F1 through F8 on the keyboard directly correspond with the labels that appear on the display. These keys provide you with access to the modes and features of your terminal.

The screen labels are half-intensity, reverse video pads across the bottom of the screen. These pads contain the current functions for the screen-labeled keys.

The screen label structure is based on "root" keys. Depressing a "root" (with the Control key depressed) changes the screen labels and, hence, the screen-labeled key functions. "Root" identifiers are given on the front face of the function keys F1, F7, and F8.

When in PC mode, only the F1 root key is functional. It must be depressed while the left Ctrl and the left Alt key are depressed to enter Setup.

## Setup Root

The first depression of the Setup root key (with the Ctrl (Control) key depressed in the Normal mode or the left Ctrl and left Alt keys depressed in PC mode) displays the terminal options and associated screen labels. The second depression of this key (with the Ctrl key or left Ctrl and left Alt keys depressed) will exit the Options Setup state.

The CHANGE OPTION key causes the option that the cursor is in to step through its allowable values. Note that the "Enter" key option requires keyboard entered characters.

The DEFAULT VALUES key displays the default values for all of the options.

The SAVED VALUES key restores the options to their previously saved values.

The SAVE key stores the currently displayed option values into nonvolatile memory.

The NEXT SETUP key brings up the User Fkey Setup screen and its labels. Each Fkey string and its current label will be displayed. While the User Fkey Setup screen is displayed, the Fkeys perform the following functions:

The PREVIOUS FIELD and NEXT FIELD keys are used to move the cursor backward and forward through the User Fkey label and string fields in the User Fkey Setup mode.

Depressing the DEFAULT VALUES key causes the default values for the User Fkey labels and strings to be displayed (see Figure 5-2 for default values).

Depressing the NEXT SETUP key brings up the display of the Options Setup screen.

Depressing the CLEAR TO END key in the Options Setup mode will clear the Enter key string option from the cursor to the end of the string. In this mode , this key is operable only when the cursor is in the string area. Depressing this key in the User Fkey Setup mode will clear the field (label or string) from the cursor position to the end of the field.

Depression of DEFAULT VALUES, SAVED VALUES, or SAVE screen-labeled keys causes the message "DONE" to be written at the bottom left corner of the Options screen. The User Fkey Setup mode is exited and the Fkey strings and labels are stored when the Setup key is depressed (with the Control key or left Ctrl and left Alt keys depressed). "DONE" will be erased when any key except Shift, Control, Caps Lock, or Alt is depressed.

## User Fkey Root

Depressing the User Fkey root key (with the Control key depressed) displays the User Fkey labels when in the Normal Terminal mode.

Depressing one of the "F" keys while the User Fkey labels are displayed will cause its User function key string to be transmitted.

The User function key strings can be programmed in the Setup mode using the User Fkey Setup screen or can be downloaded from the line.

Each string can contain up to thirty-five characters. The screen labels are sixteen characters long.

## Systm Fkey Root

Depressing the Systm Fkey root key (with the Control key depressed) displays the Systm Fkey labels when in the Normal Terminal mode.

There are fourteen system function keys, each of which is programmable only from the line. Each system function key can be programmed with two eight character strings, one in the Unshifted mode and one in the Shift mode.

Systm Fkeys F1 through F8 have programmable screen labels and are only operational after the Systm Fkey root has been depressed in the Normal Terminal mode. Function keys F9 through F14 (Figure 6-6) do not have screen labels and are always operational in the Normal Terminal mode.

When one of these Fkeys is depressed while it is operational, its programmed string will be transmitted.

The system strings cannot be viewed on a Setup screen. They can be viewed by turning the Monitor mode option "on" and echoing the transmitted string back to the terminal be either a remote or local echo.

| *F9* | *F10* | *F11* | *F12* | | *F13* | *F14* |
|------|-------|-------|-------|--|-------|-------|
|      |       |       |       |  |       |       |
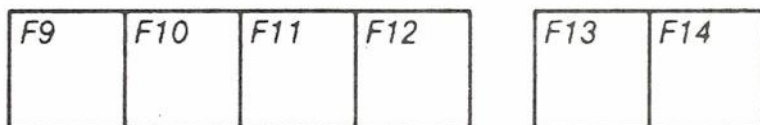
**Figure 6–6**   Function Keys F9 through F14

# Chapter 7:   Received Characters

## Contents

# Overview

This section describes the terminal's responses to characters received at the main port. Received characters fall into two categories: Display characters and control (escape) sequences. This section describes the terminal action to both display characters and escape sequences.

The 605 BCT is an ASCII device with American National Standards Institute (ANSI) standard 3.64 based escape sequences.

Table 7-1 shows the ASCII character set that the terminal recognizes. The first two columns (0 and 1) are control characters, some of which cause terminal actions. These are described in this section.

In the interactive state with Monitor mode on, all characters are displayed. Received escape sequences and control characters will be displayed but not acted on (LF, VT, and FF will be displayed and then acted on as a NEWLINE). With Monitor mode off, control characters and escape sequences will be acted on but not displayed, except SUB and CAN which are always displayed.

**Table 7–1**   ASCII Code

1st Hexidecimal Character

| Hex (2nd) \ Hex (1st) | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Ø | NUL | DLE | SP | Ø | @ | P | ` | p |
| 1 | SOH | DC1 | ! | 1 | A | Q | a | q |
| 2 | STX | DC2 | " | 2 | B | R | b | r |
| 3 | ETX | DC3 | # | 3 | C | S | c | s |
| 4 | EOT | DC4 | $ | 4 | D | T | d | t |
| 5 | ENQ | NAK | % | 5 | E | U | e | u |
| 6 | ACK | SYN | & | 6 | F | V | f | v |
| 7 | BEL | ETB | ' | 7 | G | W | g | w |
| 8 | BS | CAN | ( | 8 | H | X | h | x |
| 9 | HT | EM | ) | 9 | I | Y | i | y |
| A | NL | SUB | * | : | J | Z | j | z |
| B | VT | ESC | + | ; | K | [ | k | { |
| C | FF | FS | , | < | L | \ | l | | |
| D | CR | GS | – | = | M | ] | m | } |
| E | SO | RS | . | > | N | ^ | n | ~ |
| F | SI | US | / | ? | O | _ | o | DEL |

2nd Hexidecimal Character

| NUL ● Null | BS ● Back Space | DLE ● Data Link Escape | CAN ● Cancel |
|---|---|---|---|
| SOH ● Start of Heading | HT ● Horizontal Tab | DC1 ● Device Control 1 | EM ● End of Media |
| STX ● Start of Text | NL ● New Line | DC2 ● Device Control 2 | SUB ● Substitute |
| ETX ● End of Text | VT ● Vertical Tab | DC3 ● Device Control 3 | ESC ● Escape |
| EOT ● End of Transmis'n | FF ● Form Feed | DC4 ● Device Control 4 | FS ● Field Separator |
| ENQ ● Enquiry | CR ● Carriage Ret | NAK ● Negative Acknowledge | GS ● Group Separator |
| ACK ● Acknowledge | SO ● Shift-Out | SYN ● Synchronous | RS ● Record Separator |
| BEL ● Bell | SI ● Shift-In | ETB ● End of Trans'n Block | US ● Unit Separator |
| | SP ● Space | DEL ● Delete | |

# Control Characters

Table 7-2 lists the ASCII control characters and describes actions, if any, that the terminal takes in response to the characters.

**Table 7–2**   ASCII Control Characters

| Character | Mnemonic | Displayed Character | Hex Code | Function |
|---|---|---|---|---|
| Null | NUL | | 00 | none |
| Start of Header | SOH | $S_H$ | 01 | none |
| Start of Text | STX | $S_X$ | 02 | none |
| End of Text | ETX | $E_X$ | 03 | none |
| End of Transmission | EOT | $E_T$ | 04 | none |
| Enquiry | ENQ | $E_Q$ | 05 | none |
| Acknowledge | ACK | $A_K$ | 06 | none |
| Bell | BEL | ♘ | 07 | ring bell |
| Back Space | BS | $B_S$ | 08 | backspace |
| Horizontal Tab | HT | > | 09 | horizontal tab |
| Linefeed (Newline) | LF | ≡ | 0A | linefeed |
| Vertical Tab | VT | $V_T$ | 0B | linefeed |
| Formfeed | FF | $F_F$ | 0C | linefeed |
| Carriage Return | CR | < | 0D | carriage return |
| Shift Out | SO | $S_O$ | 0E | select G1 font |
| Shift In | SI | $S_I$ | 0F | select G0 font |
| Data Link Escape | DLE | $D_L$ | 10 | none |
| Device Control 1 | DC1 | $D_1$ | 11 | none |
| Device Control 2 | DC2 | $D_2$ | 12 | turn on print on-line |
| Device Control 3 | DC3 | $D_3$ | 13 | none |
| Device Control 4 | DC4 | $D_4$ | 14 | turn off print on-line |

**Table 7–2**   ASCII Control Characters (Continuation)

| Character | Mnemonic | Displayed Character | Hex Code | Function |
|-----------|----------|---------------------|----------|----------|
| Negative Acknowledge | NAK | $N_K$ | 15 | none |
| Synchronous | SYN | $S_Y$ | 16 | none |
| End of Transmission Block | ETB | $E_B$ | 17 | none |
| Cancel | CAN | $C_N$ | 18 | cancel escape sequence parsing |
| End of Media | EM | $E_M$ | 19 | none |
| Substitute | SUB | $S_B$ | 1A | cancel escape sequence parsing |
| Escape | ESC | $E_C$ | 1B | begin escape sequence parsing |
| Field Separator | FS | $F_S$ | 1C | none |
| Group Separator | GS | $G_S$ | 1D | none |
| Record Separator | RS | $R_S$ | 1E | none |
| Unit Separator | US | $U_S$ | 1F | none |

## Backspace (BS)

Receiving the Backspace character (Hex 08) causes a cursor left function. Receiving continuous backspace characters will cause continuous cursor left functions until the cursor is in the first character position of the current line.

## Bell (BEL)

Receiving Bell characters (Hex 07) causes the terminal's bell to sound, if the "Bell" option is not set to "off"

## Cancel (CAN)

Receiving the Cancel character (Hex 18) causes escape sequence parsing to be terminated. The character will also be displayed.

## Carriage Return (CR)

Receiving the Carriage Return character (Hex 0D) causes the cursor to return to the first character position of the current line.

## DC2

Receiving the DC2 character (Hex 12) turns on PRINT ON-LINE.

## DC4

Receiving the DC4 character (Hex 14) turns off PRINT ON-LINE.

## Escape (ESC)

Receiving the Escape character (Hex 1B) begins a control sequence. The characters that follow the Escape character cause a special function to be performed.

## Formfeed (FF)

Receiving the Formfeed character (Hex 0C) will cause the cursor to move down one line within the same column. A destructive scroll will occur if the cursor is currently located on the last line of the scrolling region.

## Horizontal Tab (HT)

Receiving the Horizontal Tab character (Hex 09) causes the cursor to advance to the next preset horizontal tab stop. The tabs in the terminal are preset at every eighth column starting with column 9. The cursor will move to column 80 if it is past column 73 while in 80 Column mode or to column 132 if it is past column 129 while in the 132 Column mode.

## Linefeed (LF)

Reception of the Linefeed character will cause an index or a newline function to be performed, depending on the Newline on LF Option (refer to Chapter 5). Destructive scrolling will occur when the cursor is located on the last line of the scrolling region during a linefeed operation.

## Shift In (SI)

Receiving the Shift In character (Hex 0F), while in the Normal mode, causes the character set assigned to G0 to become active.

## Shift Out (SO)

Receiving the Shift Out character (Hex 0E), while in the Normal mode, causes the character set assigned to G1 to become active.

## Substitute (SUB)

Receiving the Substitute character (Hex 1A) causes escape sequence parsing to be terminated. The character will also be displayed.

## Vertical Tab (VT)

Reception of the Vertical Tab character (Hex 0B) causes the cursor to move down one line within the same column. A destructive scroll will occur if the cursor is currently in the last line of the scrolling region.

# Escape Sequences

The 605 BCT is capable of responding to many escape sequences. These sequences provide additional functions not provided by the control characters. When received, an escape sequence is acted upon provided that the Monitor Mode Option is "off". When the Monitor Mode Option is "on", the sequence will be displayed and not acted upon.

The majority of the escape sequences that the terminal responds to are ANSI 3.64 based.

When escape sequences are written out in this User's Guide, the ASCII character ESCAPE (Hex 1B) is shown as Esc, the same as the key legend. Spaces in the sequences are provided for reader clarity.

There are two types of parameters: numeric (pn) and selective (ps). Both types are similar in that they are expressed by ASCII decimal digits. Numeric parameters convey a numeric quantity whereas selective parameters are used to choose from a list of options that have no natural order.

The terminal escape sequences are described in the following sections:

- Attribute Sequences
- Character Set Sequences
- Cursor Positioning Sequences
- Editing Sequences
- Downloading Sequences
- Miscellaneous Sequences
- Mode Sequences
- Printing Sequences
- Reporting Sequences

## Attribute Sequences

The attribute escape sequences can be used to modify text on the
display or to select a different size of display characters.

### Esc [ ps m  Set Character Attributes

Character attributes are invoked when this escape sequence is
received with a single parameter or a combination of parameters.  The
sequences used are the ANSI 3.64 standard sequences for SELECT
GRAPHIC RENDITION (SGR) commands using the selective parameters:

    0 = normal
    1 = bold
    2 = subdued
    4 = underline
    5 = blink
    7 = reverse video
    8 = blank

Example:  The sequence Esc [0;4;5m will clear all the attributes
          currently on and then set underscore and blink on.

Character attributes can be cleared along with characters by using the
proper clearing sequences (refer to Clear Screen and Clear In Line
under "Editing Sequences" in this chapter).

The default option for Reverse Video ("no") is assumed in the attribute definitions that appear below:

- Normal        Characters entered onto the display will be light characters on a dark background.

- Bold        Characters entered onto the display will be in increased intensity.

- Subdued        Characters entered onto the display will be in decreased intensity.

- Underline        Characters entered onto the display will be underlined.

- Blink        Characters entered onto the display will be blinking between normal and bold if the intensity is normal or bold, or between normal and subdued if the intensity is subdued.

- Reverse Video        Characters entered onto the display will be dark characters on a light background.

- Blank        Characters entered onto the display will be blanked.

Bold, normal, subdued and intensities and blank are all mutually exclusive. When one of these intensity sequences is received, it overrides the previous intensity state. Blank also overrides blink.

Table 7-3 is a list of escape sequences that specify the character attribute. The active attributes, after receiving the sequence, are indicated by an x. The parameters need not be in numerical order; however, a 0 always cancels all previously assigned attributes.

**Table 7—3**  Character Attribute Escape Sequences

| Sequence | 0<br>Norm | 1<br>Bold | 2<br>Sub-<br>dued | 8<br>Blank | 5<br>Blink<br>Bld/Nrm | 5<br>Blink<br>Nrm/Sub | 4<br>Under-<br>scored | 7<br>Reverse<br>Video |
|---|---|---|---|---|---|---|---|---|
| Esc[0m | X | | | | | | | |
| Esc[0;1m | | X | | | | | | |
| Esc[0;2m | | | X | | | | | |
| Esc[0;8m | | | | X | | | | |
| Esc[0;4m | | | | | | | X | |
| Esc[0;5m | | | | | X | | | |
| Esc[0;7m | X | | | | | | | X |
| Esc[0;1;4m | | X | | | | | X | |
| Esc[0;2;4m | | | X | | | | X | |
| Esc[0;4;5m | | | | | X | | X | |
| Esc[0;4;7m | X | | | | | | X | X |
| Esc[0;4;8m | | | | X | | | X | |
| Esc[0;1;5m | | | | | X | | | |
| Esc[0;2;5m | | | | | | X | | |
| Esc[0;5;7m | | | | | X | | | X |
| Esc[0;5;8m | | | | X | | | | |
| Esc[0;1;4;5m | | | | | X | | X | |
| Esc[0;1;4;7m | | X | | | | | X | X |
| Esc[0;2;4;5m | | | | | | X | X | |
| Esc[0;2;4;7m | | | X | | | | X | X |
| Esc[0;4;5;7m | | | | | X | | X | X |
| Esc[0;4;5;8m | | | | X | | | X | |
| Esc[0;1;5;7m | | | | | X | | | X |
| Esc[0;2;5;7m | | | | | | X | | X |
| Esc[0;4;7;8m | | | | X | | | X | X |
| Esc[0;5;7;8m | | | | X | X | | | X |
| Esc[0;1;4;5;7m | | | | | X | | X | X |
| Esc[0;2;4;5;7m | | | | | | X | X | X |
| Esc[0;4;5;7;8m | | | | X | X | | X | X |

## Double High, Double Wide Attribute

Esc # 3  Top of a Double High and Double Wide Line
Esc # 4  Bottom of a Double High and Double Wide Line

Receiving the sequence Esc # 3 will cause the characters on the line that contains the cursor to become the top of double high and double wide characters. Receiving the sequence Esc # 4 will cause the characters on the cursor line to become the bottom of double high and double wide characters.

To create a full double high and double wide character line, display two adjacent lines with the same characters and use Esc # 3 on the top and Esc # 4 on the bottom line. If the line previously had an attribute of single wide and the line contained more characters than half of the line, characters originally past the center of the screen will be lost.

## Esc # 5  Single High and Single Wide Line

Receiving this sequence causes the cursor line to become single high, single wide. This is the default attribute.

## Esc # 6  Double Wide/ Single High Line

Receiving this sequence will cause the line which contains the cursor to become double wide and single high. If the line previously had an attribute of single wide and the line contained more characters than half of the line, characters originally past the center of the screen will be lost.

## Character Set Sequences

In Normal mode the terminal has two character sets that are active at any given time. The character set escape sequences can be used to assign different character sets as the active sets. The active character sets are named G0 and G1. At power up, both are set to the United States character set and G0 is selected. Receipt of the control character SO (CTRL + N) causes the G1 set to become selected. Receipt of the control character SI (Ctrl + O) causes G0 to once again become the selected character set.

The following escape sequences can be used to assign the associated character sets to either the G0 or G1 set.

Esc ( A    United Kingdom Character Set for G0

Esc ( B    United States Character Set for G0

Esc ( 0    Special Character and Line-Drawing Character Set for G0

Esc ( 1    Securities Industry Character Set for G0

Esc ( }    Mosaic Character Set for G0

Esc ) A    United Kingdom Character Set for G1

Esc ) B    United States Character Set for G1

Esc ) 0    Special Character and Line-Drawing Character Set for G1

Esc ) 1    Securities Industry Character Set for G1

Esc ) }    Mosaic Character Set for G1

Refer to Appendix C for the hexadecimal equivalents for the various characters contained in the above character sets.

**Note 1:**  When the terminal is optioned for XT, AT1 or AT2, the PC font is active. The 256 characters that are available in the PC font are displayed by sending 8-bit codes to the terminal. Control characters (Hex 00 through 1F) are displayed when Monitor mode is "on" or when immediately preceded by an ESC character. They are acted on when Monitor mode is "off".

**Note 2:**  Regardless of which character sets are active, the United States character set is always used in the Setup mode and on the status line in Normal mode.

# Cursor Positioning Sequences

The following escape sequences provide for cursor positioning to a specific row and column. When parameter numbers are missing or set to 0, a 1 is assumed.

## Esc [ pn A   Cursor Up

Receiving this sequence will cause the cursor to move up pn lines in the same column until the cursor reaches the top line of the scrolling region or line 1 of the screen. The cursor will not move out of the scrolling region.

## Esc [ pn B   Cursor Down

Receiving this sequence will cause the cursor to move down pn lines in the same column until the cursor reaches the last line of the scrolling region or the last line of the screen. The cursor will not leave the scrolling region.

## Esc [ pn C   Cursor Right

Receiving this sequence will cause the cursor to move to the right pn columns in the same line until the last column is reached. The cursor will not go beyond the right border, regardless of autowrap option selection.

## Esc [ pn D   Cursor Left

Receiving this sequence will cause the cursor to move to the left pn columns in the same line. When the cursor is in the first column, it will not move.

## Esc 7  Save Cursor Position and Attributes
Receiving this sequence will cause the current cursor position, attribute, Origin mode condition, G0/G1 condition, and selected character set to be saved.

## Esc 8  Restore Cursor Position and Attributes
Reception of this sequence causes the cursor to move to the saved position with the saved attribute and the other saved values. When the terminal is powered up, the saved values for cursor position, attribute, and Origin mode are set to home, normal, and off, respectively. Also, G0 and G1 are set to the United States character set and G0 is active when the terminal is powered up. A cursor recall will move the cursor to the position saved or, if the saved position is cleared, it will move to the home position. On the status line, a cursor save will be ignored but a cursor recall will be recognized.

## Esc [ pn Z   Back Tab
Receiving this sequence causes pn back tabs to occur. The cursor will move to the left on the current line to the previous preset tab stops.  When the cursor is in columns 1 through 9, it is moved to column 1.

## Esc D   Index
Receiving an Index sequence causes the cursor to move down one line in the same column until it reaches the last line of the scrolling region or the last line of the screen. If the cursor is in the last line of the scrolling region, a destructive scroll will occur (a blank line will appear at the bottom of the scrolling region). When the cursor is in the last line of the screen, receiving the Index sequence will cause no cursor movement and scrolling will not occur (unless the last line of the screen is also the last line of the scrolling region). The cursor will not leave the scrolling region.

## Esc E  Newline

Receiving the Newline sequence causes the cursor to move to the first column of the next line until it reaches the last line of the scrolling region or the last line of the screen. When the cursor is in the last line of the scrolling region, a destructive scroll will occur (a blank line will appear at the bottom of the scrolling region). When the cursor is in the last line of the screen, this sequence causes the cursor to move to the first column of the last line; scrolling will not take place (unless the last line of the screen is also the last line of the scrolling region). The cursor will not leave the scrolling region.

## Esc M  Reverse Index

Receiving this sequence causes the cursor to move up one line in the same column until the first line of the scrolling region or the first line of the screen is reached. When the cursor is in the first line of the scrolling region, a destructive scroll will occur (a blank line will appear at the top of the scrolling region). When the cursor is in the top line of the screen, this sequence causes no cursor movement and scrolling will not occur (unless the top line of the screen is also the top line of the scrolling region). The cursor will not leave the scrolling region.

## Esc [ row; column H  Cursor Addressing

Cursor addressing positions the cursor with the address scheme Esc [ ; column H or Esc [ row; column f. The values for row and column are the values for the line number and column number at which the cursor is to be positioned. The row value ranges from 1 to 24 (or 25 in PC mode) and the column value ranges between 1 and 80 or 132, depending on the Columns option. When the values are missing or 0, they default to 1. When the row value is larger than the number of data lines on the screen, the value is defaulted to 24 in the Normal mode or 25 in PC mode. When the columns value is larger than the line length (80 or 132), the value is defaulted to the maximum value.

When in the Origin mode, cursor addressing is relative to the home position of the scrolling region. The cursor cannot be moved outside of the scrolling region except by a Cursor Restore (Esc 8) to a position outside the scrolling region or by positioning to the status line.

**Esc [ row; column f   Cursor Addressing**
Refer to Cursor Addressing escape sequence in this section.


**Esc [ row; column x   Cursor Positioning To The Status Line**
This sequence will cause the cursor to move to the status line (line 25 of the screen). The value for "row" is ignored. The value for "column" is a decimal whole number between 1 and 80 or 1 and 132, depending on the Columns option. The column value defaults to 1 if omitted or 0. When the column value is larger than the line length (80 or 132), the column position is defaulted to the maximum value.

This sequence is ignored when in PC mode.

## Editing Sequences

The editing sequences are used to edit and move data on the display.

### Esc [ pn L   Line Insert

Receiving the Line Insert sequence causes pn blank lines to be inserted on the screen at the current cursor position if in the scrolling region. The cursor moves to the first column of the same line. Data on the cursor line and all following lines of the scrolling region are scrolled down pn lines. All data on the lines scrolled out of the scrolling region will be lost. Line insert is active in the scrolling region only.

### Esc [ pn M   Line Delete

Receiving the Line Delete sequence causes the cursor line and pn -1 lines below the current cursor position to be deleted. The cursor moves to the first column of the same line. All lines below the cursor to the end of the scrolling region are moved up pn lines and pn blank lines are placed at the bottom of the scrolling region. Line delete is active in the scrolling region only.

### Esc [ pn P   Character Delete

Receiving this sequence causes pn characters to be deleted at the cursor position. All characters to the right of the cursor will move pn columns to the left.

### Esc [ pn @   Character Insert

Receiving the Character Insert sequence causes the insertion of pn spaces (with normal attributes) at the cursor position and extending to the right. All characters to the right of the cursor will be moved pn columns to the right. Any characters moved beyond the right margin will be lost.

## Esc [ pn b   Repeat Character

Receiving this sequence causes the last received character (not part of an escape sequence) to be repeated pn times. This sequence is not ANSI 3.64 compatible: characters can be repeated, but escape sequences cannot. In PC mode, this sequence may be used to repeat characters between 20 and 7F Hex.

## Esc [ ps J   Clear Screen

Receiving the Clear Screen sequence with ps=0 or omitted clears characters and their character attributes from the cursor to the end of the 24th line in Normal mode or the end of the 25th line in PC mode. Receiving the sequence with ps=1 clears characters and their character attributes from the beginning of the screen to the cursor. Receiving the sequence with ps=2 clears all data lines on the screen. The status line and screen labels are not affected by these sequences. When an entire line is cleared, the line attributes of that line are changed to single high/single wide.

## Esc [ ps K   Clear In Line

Receiving this sequence with ps=0 or omitted clears all data and character attributes from the cursor to the end of the current cursor line. Receiving the sequence with ps=1 clears characters and their attributes from the beginning of the current cursor line to the cursor. Receiving the sequence with ps=2 causes the current cursor line to be cleared of data and character attributes.

## Downloading Sequences

The downloading sequences are used by the host to either change terminal options or to change Fkey functions and associated labels. These escape sequences are used to redefine the terminal functionality.

### Esc [ ps1; pn; ps2; ps3 q label string Download of Function Keys (F1-F14)

The User Fkey and Systm Fkey keys can be downloaded by the host using this escape sequence.

ps1         = Fkey to be downloaded (1 through 8)

> **Note:** The ps1 can be extended to include 9 through 14 if the function key to be downloaded is a System key. If ps3 is equal to 3, the System Function key being downloaded is the Shifted mode of the key. The unshifted and shifted 9 through 14 and the shifted 1 through 8 System Function keys should not include the label string of 16 characters in the escape sequence.

pn         = number of characters in the string (up to 35 for User Fkey and 8 for Systm Fkey). If pn = 0, only the labels are downloaded without changing the strings.

ps2        = ignored

ps3        = 0 if Systm Fkey, 1 if User Fkey, or 3 if Shifted mode of a Systm Fkey.

label+string = a 16 character label (must be 16) followed immediately by the string of characters as defined by the pn in the escape sequence.

Example:    Esc[1;7;0;1qspSCROLLspspREGIONspESC[5;20r

**Note:** "sp" is the space character (Hex 20).

This sequence will write a label "SCROLL REGION" for the User Fkey 1 and load a string "Esc[5;20r" that makes lines 5 through 20 the scrolling region.

**Esc [ ps1; ps2 ¦    Download of Options**
The Speed, Send Parity, Return Key, Enter Key and Terminal Mode
Options may be downloaded to the terminal (one option per escape
sequence) by using the following sequences:

Speed (Baud)*  ps1=1

| | | |
|---|---|---|
| 300 Baud, 10 Unit Code | ps2=6 | Esc [1;6 ¦ |
| 1200 Baud, 10 Unit Code | ps2=0 | Esc [1;0 ¦ |
| 2400 Baud, 10 Unit Code | ps2=1 | Esc [1;1 ¦ |
| 4800 Baud, 10 Unit Code | ps2=2 | Esc [1;2 ¦ |
| 9600 Baud, 10 Unit Code | ps2=3 | Esc [1;3 ¦ |
| 19200 Baud, 10 Unit Code | ps2=4 | Esc [1;4 ¦ |
| 38400 Baud, 10 Unit Code | ps2=7 | Esc [1;7 ¦ |

* If the Speed Option is downloaded while the terminal is on-line, some
received characters may be lost. Downloading the speed changes the
speed of the Aux port as well as the Main port.

Send Parity*  ps1=3

| | | |
|---|---|---|
| even | ps2=0 | Esc [3;0 ¦ |
| odd | ps2=1 | Esc [3;1 ¦ |
| mark | ps2=2 | Esc [3;2 ¦ |
| space | ps2=3 | Esc [3;3 ¦ |
| none | ps2=4 | Esc [3;4 ¦ |

* If the Send Parity Option is downloaded while the terminal is on-line,
some received characters may be lost.

Return Key  ps1=8

| | | |
|---|---|---|
| LF | ps2=1 | Esc [8;1 ¦ |
| CR | ps2=0 | Esc [8;0 ¦ |
| CR/LF | ps2=2 | Esc [8;2 ¦ |

Enter Key ps1=25

    (String up to 4 characters)    ps2=Number of Characters
                                    Followed by a character
                                    string equal to ps2
                                    characters

Terminal Mode  ps1=50

| | | |
|---|---|---|
| normal | ps2=0 | Esc [50;0 | |
| XT | ps2=1 | Esc [50;1 | |
| AT1 | ps2=2 | Esc [50;2 | |
| AT2 | ps2=3 | Esc [50;3 | |

**Note:** A delay of 250 ms must be performed after a change in the
Terminal mode because receive interrupts are disabled while
setup strings are sent to the keyboard.

## Miscellaneous Sequences

### Esc c   Device Reset
Receiving Device Reset sequence when in the Normal Terminal mode causes the terminal to reset. The terminal will be set to power on conditions using the current volatile options. The screen will be cleared, and the Systm Fkey labels and strings set to their default values. No scrolling region is defined, Origin mode is off, characters have normal attributes, G1 and G0 are the United States character set, and G0 is active. Also, cursor save is cleared, the cursor is homed, print on-line is off, Insert mode is off, the cursor is visible, and the screen is unblanked. The User Fkey labels are displayed if the Labels Option is "on". Alternate keypad is in Numeric mode, print extent is set to full screen, and Printer Termination mode is off.

The Device Reset sequence is not recognized in PC mode.

### Esc [ top row; bottom row r   Split Screen
Receiving the Split Screen escape sequence causes the screen to be configured into two static regions and one scrolling region, one static region and one scrolling region, or one scrolling region. Whenever the split screen escape sequence is received, the cursor is homed. The cursor can be freely moved between screen regions with cursor addressing when not in the Origin mode, but destructive scrolling will occur only in the defined region.

When in the Origin mode, the cursor cannot be moved outside the scrolling region except by means of a Cursor Restore (Esc 8) sequence outside the scrolling region or cursor positioning to the status line. The scrolling region must have at least two lines. Missing parameters or 0 will default to 1 for the top row and 24 for the bottom row in Normal mode. In PC mode the bottom row defaults to 25.

### Esc # 8   Alignment Test
Receiving the Alignment Test sequence causes the terminal to display an entire screen of uppercase "E" characters. A terminal reset will also occur.

## Esc [ ps p  Select Screen Labels

The Select Screen Labels sequence is recognized only when the terminal is in Normal mode.

> Receiving this sequence with ps=0 causes the Systm Fkey labels to become visible on the screen.

> Receiving the sequence with ps=1 causes the User Fkey labels to appear.

> Receiving the sequence with ps=2 causes the Fkey labels to be blanked.

> Receiving any one of these sequences may change the Labels option.

## Esc Q  Save Options Into Nonvolatile Options
## Esc R  Restore Into Nonvolatile Options

Receiving the sequence Esc Q causes the current options to be saved into nonvolatile options. The ESC R sequence restores the nonvolatile (saved) options into the volatile (current) options.

When the nonvolatile options are restored as the current options, the screen is blanked of all data, the scrolling region is reset to the entire data area of the screen, the Insert mode is turned off. All restored options are effective immediately.

An Esc R sequence must be followed by a short period of idle line (approximately two msec) to prevent data loss.

## Mode Sequences

The following escape sequences are used to change the mode of the terminal.

### Esc =    Alternate Keypad Mode

The numeric keypad can be selected to generate either numeric characters or control functions.  This sequence is used to enter the Alternate Keypad mode that is used to generate control functions.

This sequence is not recognized when the terminal is in PC mode.

### Esc >    Numeric Keypad Mode

This sequence selects the Numeric Keypad mode that is used to generate the numeric characters.  The keypad is defaulted to the Numeric Keypad mode.

This sequence is not recognized when the terminal is in PC mode.

**Table 7–4** ANSI Keypad Codes

| Key | Numeric Keypad Mode | | Alternate Keypad Mode | | |
|---|---|---|---|---|---|
| 0 | 0 | | Esc | O | p |
| 1 | 1 | | Esc | O | q |
| 2 | 2 | | Esc | O | r |
| 3 | 3 | | Esc | O | s |
| 4 | 4 | | Esc | O | t |
| 5 | 5 | | Esc | O | u |
| 6 | 6 | | Esc | O | v |
| 7 | 7 | | Esc | O | w |
| 8 | 8 | | Esc | O | x |
| 9 | 9 | | Esc | O | y |
| – | minus | | Esc | O | m |
| , | comma | | Esc | O | l |
| . | period | | Esc | O | n |
| ENTER** | CR | | Esc | O | M |
| = ( | equal | left parenthesis | Esc | O | P |
| * ) | asterisk | right parenthesis | Esc | O | Q |
| / | slash | | Esc | O | R |
| + | plus | | Esc | O | S |

**The ENTER key can be programmed for up to four (4) characters.

## Esc [ 4 h  Enter Insert Mode

Receiving this sequence causes the terminal to enter the Insert mode. In the Insert mode, a character to be displayed causes the character at the cursor position and all characters to the right of the cursor to be moved to the right one position. The entered character is displayed at the cursor position. When the terminal is in the Insert mode, the "ins" indicator appears between the F4 and F5 screen labels.

## Esc [ 4 l  Exit Insert Mode

When this sequence is received, the terminal exits the Insert mode.

## Esc [ ps;....; ps l   Reset Mode Escape Sequences

| | |
|---|---|
| Esc [ 2 l | Keyboard Unlock (Normal mode only) |
| Esc [ 4 l | Turn Off Insert Mode |
| Esc [ 12 l | Local Echo On |
| Esc [ 13 l | Turn Monitor Mode Off |
| Esc [ 20 l | Turn Newline on LF Off |

## Esc [ ps;....; ps h   Set Mode Escape Sequences

| | |
|---|---|
| Esc [ 2 h | Keyboard Lock (Normal mode only) |
| Esc [ 4 h | Turn On Insert Mode |
| Esc [ 12 h | Local Echo Off |
| Esc [ 13 h | Turn Monitor Mode On |
| Esc [ 20 h | Turn Newline on LF On |

The local echo option may be changed while in PC mode; however, the option is ignored until the Terminal mode is changed to normal.

## Esc [ ? ps;....; ps l   Reset Private Mode Sequences

| | |
|---|---|
| Esc [ ? 3 l | Set Screen to 80 Columns |
| Esc [ ? 4 l | Set to Vertical Jump Scroll |
| Esc [ ? 5 l | Set Screen to Normal Video |
| Esc [ ? 6 l | Origin Mode Off |
| Esc [ ? 7 l | Turn Autowrap Off |
| Esc [ ? 10 l | Unblank Screen |
| Esc [ ? 11 l | Set Cursor Type to Block |
| Esc [ ? 12 l | Set Cursor to Steady |
| Esc [ ? 13 l | Turn Labels On |
| Esc [ ? 15 l | Set Check Parity Option to "No" |
| Esc [ ? 16 l | Turn Off Key Click |
| Esc [ ? 18 l | Print Terminator Mode Off |
| Esc [ ? 19 l | Print Extent Mode Off |
| Esc [ ? 25 l | Cursor Off (invisible) |

The labels option may be changed while in PC mode; however, the option is ignored until the Terminal mode is changed to normal.

## Esc [ ? ps;....; ps h   Set Private Mode Sequences

| | |
|---|---|
| Esc [ ? 3 h | Set Screen to 132 Columns |
| Esc [ ? 4 h | Set to Vertical Smooth Scroll |
| Esc [ ? 5 h | Set Screen to Reverse Video |
| Esc [ ? 6 h | Origin Mode On |
| Esc [ ? 7 h | Turn Autowrap On |
| Esc [ ? 10 h | Blank Screen |
| Esc [ ? 11 h | Set Cursor Type to Underscore |
| Esc [ ? 12 h | Set Cursor to Blink |
| Esc [ ? 13 h | Turn Labels Off |
| Esc [ ? 15 h | Set Check Parity Option to "Yes" |
| Esc [ ? 16 h | Turn On Key Click |
| Esc [ ? 18 h | Print Terminator Mode On |
| Esc [ ? 19 h | Print Extent Mode On |
| Esc [ ? 25 h | Cursor On |

Receiving the sequence Esc [?6h causes the terminal to enter the Origin mode with the cursor positioned in row 1, column 1 of the scrolling region. In this mode, the cursor will not leave the scrolling region except for the status line or for a cursor restore function . Cursor addressing in this mode is done relative to the home position in the scrolling region. Receiving the sequence Esc [?6l resets the Origin mode. The cursor is homed (row 1, column 1 of the screen). Cursor addressing is independent of the scrolling region and the cursor may be positioned anywhere on the screen except for the screen label lines.

Receiving the sequence Esc [?25l will cause the cursor, if visible, to become invisible; receiving the sequence Esc [?25h will cause the cursor, if invisible, to become visible.

Receiving the sequence Esc [?10h will cause the screen to be blanked; receiving the sequence Esc [?10l will unblank a blanked screen.

The labels option may be changed while in PC mode; however, the option is ignored until the Terminal mode is changed to normal.

## Printing Sequences

**Esc [ ? 4 i     Print On-Line Off**
**Esc [ ? 5 i     Print On-Line On**

Receiving the above sequences will either cause the Print On-Line function to be turned "on" or "off".

**Esc [ 4 i     Media Copy Off**
**Esc [ 5 i     Media Copy On**

Receiving the above sequences will turn Media Copy "on" or "off". When MEDIA COPY is on, all data sent to the terminal is sent directly to the printer and is not displayed.

If the send parity option is set to "none" and check parity is set to "no" all 8 data bits are sent to the printer. Otherwise, 7 data bits are sent and the 8th bit is sent as space. The keyboard is active during media copy. When local echo is "on", characters typed on the keyboard are sent to the printer as well as to the line.

**Esc [ 0 i     Print Screen**

Receiving the above sequence sends the characters, currently displayed on the screen to the printer.

## Reporting Sequences

All of the reporting sequences are ignored while the terminal is in PC mode.

**Esc [ ps n  Terminal Status Request**

Receiving the sequence with ps=5 (terminal status request) causes the terminal to reply with either a test passed (Esc [ 0 n) or a test failed (Esc [ 3 n) reply. The response is based upon the results of the most recent self test.

**Esc [ ? ps n  Printer Status Request**

Receiving the sequence with ps=15 (printer status request) causes the terminal to reply with either a printer not ready (Esc [ ? 11 n) or a printer ready (Esc [ ? 10 n) reply.

**Esc [ 0 c  Request Software Configuration**
**Esc [ c    Request Software Configuration**

Receiving either of the above sequences will cause the terminal to respond with the Software Configuration response sequence.

**Esc [ ? ps1; ps2; ps3 c Software Configuration Response**

This sequence is sent from the terminal in response to the Software Configuration Request sequence, that was sent from the host.

  ps1 = Terminal Indicator (7 for 605 BCT)
  ps2 = Terminal Type (5 for 605 BCT)
  ps3 = Firmware Release Number (1 for 605 BCT)

**Esc [ > 0 c  Request Hardware Configuration**
**Esc [ > c    Request Hardware Configuration**

Receiving either of the above sequences causes the terminal to respond with the Hardware Configuration response sequence.

## Esc [ > ps c Hardware Configuration Response

This sequence is sent from the terminal in response to the Hardware Configuration Request sequence, that was sent from the host.

ps = keyboard type
    0 = no keyboard or keyboard error occurred
    4 = 102 Key Keyboard

## Esc [ 6 n    Cursor Position Report Request

Receiving this sequence causes the terminal to respond with the cursor position sequence. The Cursor Position Report sequence (Esc[row;column R) is sent back to the host. The row and column values are the same as those which are used to address the cursor position with Origin mode off, i.e., cursor position is relative to the first row (line) and first column of the display.

## Esc [ s    Upload Options Request

Receiving this sequence causes the terminal to transmit the option values. The terminal responds with the sequence Esc [ ps1, ps2, through ps27. Each ps is an ASCII value representing an option selection. The values are:

ps1 = 0 Option does not exist.

ps2 = Speed Option
    1 = 1200 bps
    2 = 2400 bps
    3 = 4800 bps
    4 = 9600 bps
    5 =19200 bps
    7 =   300 bps
    8 =38400 bps

ps3 = Send Parity Option
    1 = even
    2 = odd
    3 = mark
    4 = space
    5 = none

ps4 = Check Parity Option
    1 = no
    2 = yes

ps5 = Local Echo Option
    1 = off
    2 = on

ps6 = Monitor Mode Option
    1 = off
    2 = on

ps7 = Autowrap Option
    1 = on
    2 = off

ps8 = Newline on Linefeed Option
    1 = no
    2 = yes

ps9 = Return Key Option
    1 = CR
    2 = LF
    3 = CR and LF

ps10 = 0 (not used)

ps11 = Columns Option
    1 =  80 columns
    2 = 132 columns

ps12 = Vertical Scrolling Option
    1 = jump
    2 = smooth

ps13 = Reverse Video Option
    1 = no
    2 = yes

ps14 = Bell Option
    5 = off
    4 = on

ps15 = Key Click Option
    1 = off
    2 = on

ps16 = Cursor Type Option
    1 = block
    2 = line

ps17 = Cursor Blink Option
    1 = no
    2 = yes

ps18 = Labels Option
    1 = on
    2 = off

ps19 = 0 (not used)

ps20 = 0 (not used)

ps21 = 0 (not used)

ps22 = 0 (not used)

ps23 = 0 (not used)

ps24 = 0 (not used)

ps25 = 0 (not used)

ps26 = 0 (not used)

ps27 = Terminal Mode Option
    1 = normal
    2 = XT
    3 = AT1
    4 = AT2

ps28 = Swap Delete/Del Option
    1 = no
    2 = yes

# Chapter 8: Transmitted Characters

## Contents

# Overview

This section describes the ASCII characters generated by the 605 BCT.

The tables in this chapter show the transmitted ASCII codes, characters, and escape sequences sent to the line when the various keys are typed on the keyboard in the normal mode. The characters will be displayed and the functions performed locally if data is echoed back (local or remote).

A figure of the actual keyboard layout (with the keys numbered) is provided as a cross reference for the key numbers used in the tables.

When the terminal is in XT, AT1, or AT2 modes, the keyboard generates a unique Hex scan code for each keyswitch, including codes for both depression (make) and release (break). In these modes, the keyboard scan codes are sent directly from the keyboard to the main port of the terminal, without interpretation. The Hex scan codes for the XT, AT1, and AT2 modes are provided in Appendix F.

# Transmitted Characters

## Keyboard

The keyboard layout is shown below:
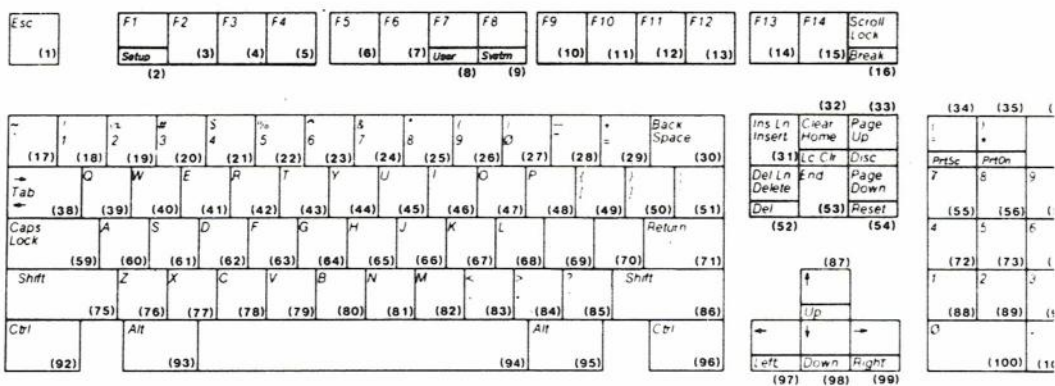


**Figure 8–1**   Keyboard Layout

# Transmitted Codes (Normal Mode)

**Table 8–1** Special Function Keys

| Key No. | Description | Unshifted | Shifted | Control |
|---------|-------------|-----------|---------|---------|
| 1 | ESC | Escape | -- | -- |
| 2 | F1 | ESC Oc | ESC OC | -- |
| 3 | F2 | ESC Od | ESC OD | -- |
| 4 | F3 | ESC Oe | ESC OE | -- |
| 5 | F4 | ESC Of | ESC OF | -- |
| 6 | F5 | ESC Og | ESC OG | -- |
| 7 | F6 | ESC Oh | ESC OH | -- |
| 8 | F7 | ESC Oi | ESC OI | -- |
| 9 | F8 | ESC Oj | ESC OJ | -- |
| 10 | F9 | ESC No | ESC NO | -- |
| 11 | F10 | ESC Np | ESC NP | -- |
| 12 | F11 | ESC Nq | ESC NQ | -- |
| 13 | F12 | ESC Nr | ESC NR | -- |
| 14 | F13 | ESC Ns | ESC NS | -- |
| 15 | F14 | ESC Nt | ESC NT | -- |
| 16 | SCROLL LOCK/ | DC1 or DC3 | DC1 or DC3 | break |
| 31 | INSERT/INS LN | ESC [@ | ESC [L | -- |
| 32 | HOME/CLEAR | ESC [H | ESC 2J | Local Clear |
| 33 | PAGE UP | ESC [V | -- | Disconnect |
| 52* | DELETE/DEL LN | ESC [P | ESC [M | DEL |
| 52** | DELETE/DEL LN | DEL | ESC [M | ESC [P |
| 53 | END | ESC [24;1H | -- | -- |
| 54 | PAGE DOWN | ESC [U | -- | ESC c |
| 87 | up arrow | ESC [A | ESC [T | ESC [t |
| 97 | left arrow | ESC [D | ESC [†A | ESC [†A |
| 98 | down arrow | ESC [B | ESC [S | ESC [S |
| 99 | right arrow | ESC [C | ESC [†@ | ESC [†@ |

**Note: 1** Asterisk (*) indicates key 52 output when the Swap Delete/Del option is set to "no".

**Note: 2** Double asterisk (**) indicates key 52 output when the Swap Delete/Del option is set to "yes".

**Note: 3** The dagger (†) character in the above sequences are used to indicate a space character.

**Table 8–2**  Main Keyboard Keys

| Key No. | Description | Unshifted | Shifted | Control |
|---------|-------------|-----------|---------|---------|
| 17 | ' | 60 | 7E | -- |
| 18 | 1 ! | 31 | 21 | -- |
| 19 | 2 @ NULL | 32 | 40 | 00 |
| 20 | 3 # | 33 | 23 | -- |
| 21 | 4 $ | 34 | 24 | -- |
| 22 | 5 % | 35 | 25 | -- |
| 23 | 6 ^ RS | 36 | 5E | 1E |
| 24 | 7 & | 37 | 26 | -- |
| 25 | 8 * | 38 | 2A | -- |
| 26 | 9 ( | 39 | 28 | -- |
| 27 | 0 ) | 30 | 29 | -- |
| 28 | - _ US | 2D | 5F | 1F |
| 29 | = + | 3D | 2B | -- |
| 30 | BACKSPACE | 08 | 08 | 08 |
| 38 | TAB | 09 | ESC [ Z | ESC [ Z |
| 39 | Q DC1 | 71 | 51 | 11 |
| 40 | W ETB | 77 | 57 | 17 |
| 41 | E ENQ | 65 | 45 | 05 |
| 42 | R DC2 | 72 | 52 | 12 |
| 43 | T DC4 | 74 | 54 | 14 |
| 44 | Y EM | 79 | 59 | 19 |
| 45 | U NAK | 75 | 55 | 15 |
| 46 | I HT | 69 | 49 | 09 |
| 47 | O SI | 6F | 4F | 0F |
| 48 | P DLE | 70 | 50 | 10 |
| 49 | [ { ESC | 5B | 7B | 1B |
| 50 | ] } GS | 5D | 7D | 1D |
| 51 | \ | FS | 5C | 7C | 1C |
| 59 | CAPS LOCK | -- | -- | -- |
| 60 | A SOH | 61 | 41 | 01 |
| 61 | S DC3 | 73 | 53 | 13 |
| 62 | D EOT | 64 | 44 | 04 |

**Table 8–2**   Main Keyboard Keys (Continuation)

| Key No. | Description | Unshifted | Shifted | Control |
|---------|-------------|-----------|---------|---------|
| 63 | F ACK | 66 | 46 | 06 |
| 64 | G BEL | 67 | 47 | 07 |
| 65 | H BS | 68 | 48 | 08 |
| 66 | J LF | 6A | 4A | 0A |
| 67 | K VT | 6B | 4B | 0B |
| 68 | L FF | 6C | 4C | 0C |
| 69 | ; : | 3B | 3A | -- |
| 70 | ' " | 27 | 22 | -- |
| 71 | RETURN (Depends on Option) | | | |
| 75 | SHIFT | -- | -- | -- |
| 76 | Z SUB | 7A | 5A | 1A |
| 77 | X CAN | 78 | 58 | 18 |
| 78 | C ETX | 63 | 43 | 03 |
| 79 | V SYN | 76 | 56 | 16 |
| 80 | B STX | 62 | 42 | 02 |
| 81 | N SO | 6E | 4E | 0E |
| 82 | M CR | 6D | 4D | 0D |
| 83 | , < | 2C | 3C | -- |
| 84 | . > | 2E | 3E | -- |
| 85 | / ? | 2F | 3F | -- |
| 86 | SHIFT | -- | -- | -- |
| 92/96 | CTRL | -- | -- | -- |
| 94 | Space Bar | 20 | 20 | 20 |
| 93/95 | ALT | -- | -- | -- |

**Table 8–3**  Numeric Keypad

| Key No. | Description | Unshifted | Shifted | Control | Alternate Keypad |
|---------|-------------|-----------|---------|---------|------------------|
| 34 | = ( PRT SC | 3D | 28 | print screen | ESC OP |
| 35 | * ) PRT ON | 2A | 29 | print on line | ESC OQ |
| 36 | / | 2F | 2F | 2F | ESC OR |
| 37 | + ST PRT | 2B | 2B | stop print | ESC OS |
| 55 | 7 | 37 | 37 | 37 | ESC Ow |
| 56 | 8 | 38 | 38 | 38 | ESC Ox |
| 57 | 9 | 39 | 39 | 39 | ESC Oy |
| 58 | - | 2D | 2D | 2D | ESC Om |
| 72 | 4 | 34 | 34 | 34 | ESC Ot |
| 73 | 5 | 35 | 35 | 35 | ESC Ou |
| 74 | 6 | 36 | 36 | 36 | ESC Ov |
| 102 | , | 2C | 2C | 2C | ESC Ol |
| 88 | 1 | 31 | 31 | 31 | ESC Oq |
| 89 | 2 | 32 | 32 | 32 | ESC Or |
| 90 | 3 | 33 | 33 | 33 | ESC Os |
| 91 | ENTER | * | * | * | ESC OM |
| 100 | 0 | 30 | 30 | 30 | ESC Op |
| 101 | . | 2E | 2E | 2E | ESC On |

**Note:** The ENTER key can be programmed with up to four characters that are transmitted when the key is depressed.

# Chapter 9: Communications

## Contents

# Overview

This section describes the various system uses and the modem and printer interfaces. Both interfaces are 25-pin female connectors that are Electronic Industry Association (EIA) RS-232-C.

# System Use

The terminal is designed for use in a variety of full duplex systems:

- Switched Network
- Dedicated Private Line
- Multiplexed Front End
- Direct Connect

## Switched Network Systems

For switched network systems the terminal is coupled to a modem by an RS-232-C modem cable (refer to Appendix B for cables). The modem is connected to the central telephone office through dial-up lines (see Figure 9-1). This type of arrangement can be used asynchronously with full duplex modems and almost always assumes the terminal is a great distance from the remote sender (host).

The system normally allows the host to echoplex data back to the terminal. Parity checking capabilities and substitute character on received error routine are common requirements.

Some of the common types of data sets specified are the 103J, 108F, 108G, 113A, and the 212A.

The terminal is compatible with the 2212C, 2212D, and the AT&T Model 4000, 1200 bps modems. The 2212D modem is a rack mounted modem, and if it is to be used to originate calls at different speeds, it must be accessible to the user to select the proper speed.

The 2212C modem can be optioned to use the Clear to Send (CTS) lead on the EIA interface as a speed indicator. However, this function is not supported on the terminal.

The 605 BCT is also compatible with AT&T modems such as the 4024, 2224C, and the 2224CEO with MNP error checking protocol.
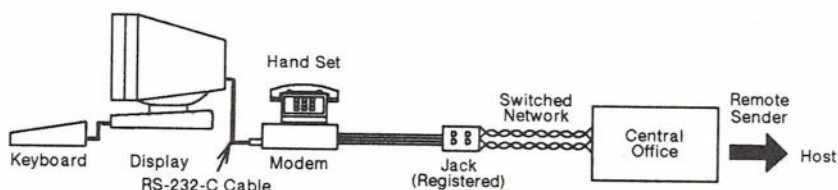
**Figure 9–1**   Switched Network
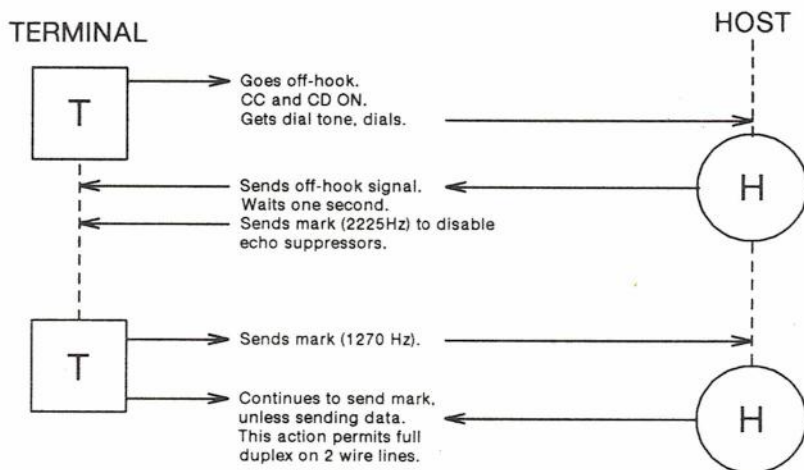


**Figure 9–2**   On-Line Modem-to-Modem Action

## Dedicated Private Line Systems

Private line point-to-point systems using dedicated telephone lines are generally used with full duplex modems at speeds of 2400 bps and above. Conditioned lines are required for higher rate analog or digital modem transmission.
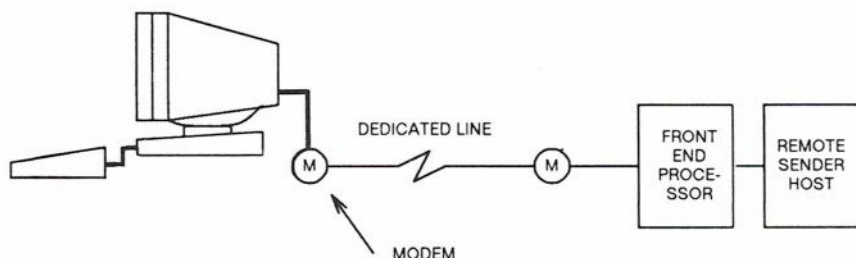
**Figure 9-3**   Dedicated Line

# Multiplexed Front End Systems

The terminal is well suited for use with a multiplexed front end
processor.  The multiplexer (or line concentrator) must be capable of:

- Asynchronous serial data transfer
- 8 bit characters (ASCII)
- Start/stop bit insertion
- Full duplex operation
- Matching modem line rate
- Parity checking and generation
- Character-at-a-time message assembly/disassembly
- Auto-answer

In this type of system, the terminal may be coupled to the multiplexer
port by EIA cable connection or by the use of modems.
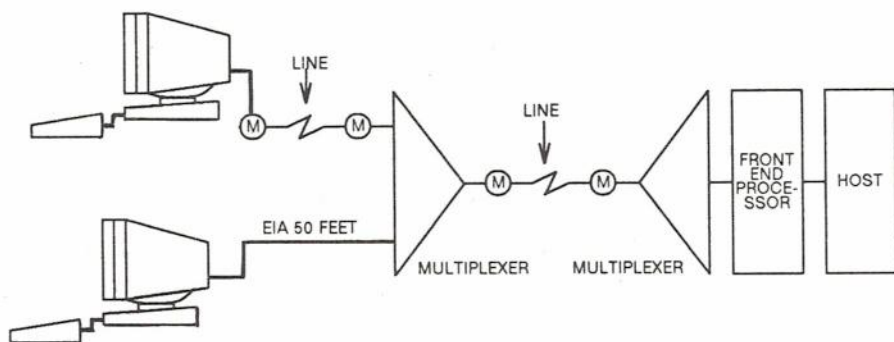


**Figure 9–4**   Terminals Multiplexed

## Direct Connect Systems

When the terminal is located within 50 feet of a host processor, a connection may be made using standard RS-232-C interface cable connections (see Figure 9-5). The cable connection must support the terminal's full duplex capability.

The terminal holds Pin 4 (Request to Send) high and does not look at Pin 5 (Clear to Send) for flow control. The host may be made to monitor Pin 20 for host to terminal sending.

Sensing of control leads by the terminal is minimal. Sending is controlled by an internal character available signal and receiving is to an input buffer. Send data is affected by keyboard inputs and responses to report request sequences from the host.



NEARBY
HOST
PROCESSOR

50 FOOT RS-232C CONNECTION
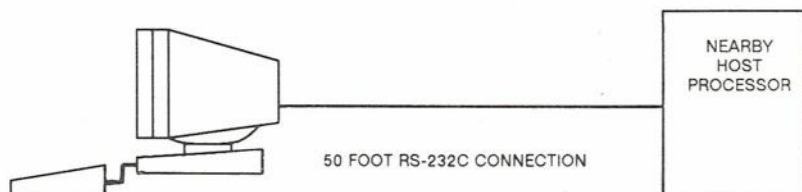
**Figure 9-5**   Direct Connect

# Interfaces

## EIA Ports

The terminal has two EIA RS-232-C ports on the rear of the display. The right port is for the modem interface (Main Port) and the left is for an optional EIA printer (Auxiliary Port). Both ports have 25-pin female connectors. Signals on these ports are defined as follows:

    ON  = +5 to +12 volts dc (Space)
    OFF = -5 to -12 volts dc (Mark)

with respect to signal ground. These definitions apply to both send and receive data.
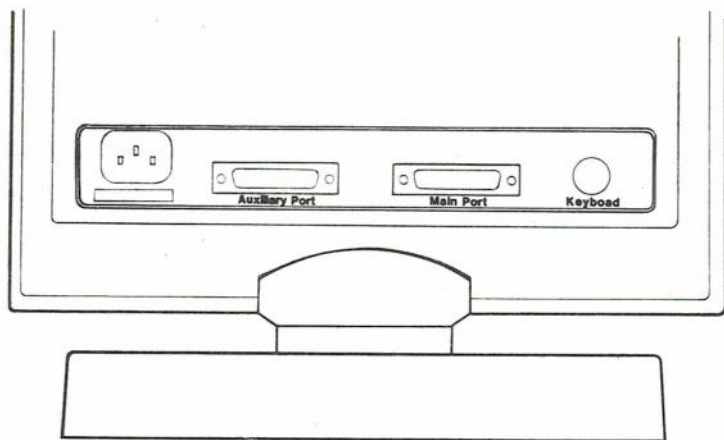


**Figure 9-6**   EIA Ports

## Main Port
DTE (Data Terminal Equipment) Port
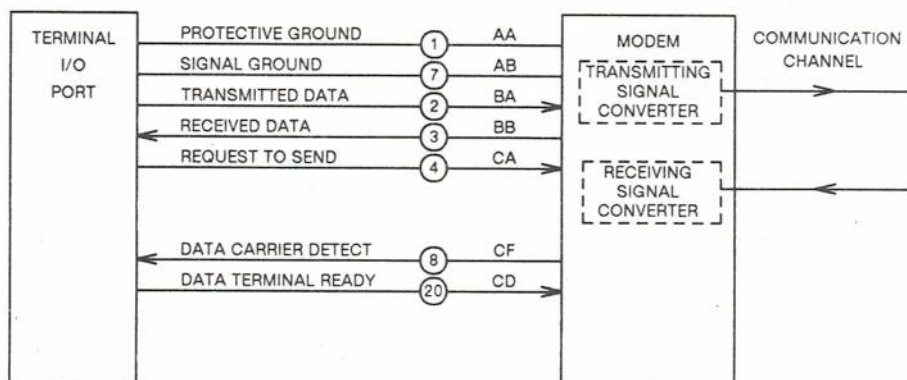


**Figure 9–7**   Main Port Cable Leads

**Note:** The terminal holds Pin 4 (Request to Send) high and does not look at a Clear to Send signal from the host.

**Table 9–1**    Main (I/O) Port Interface Pins

Pin 1    Protective Ground -- equipment frame and ac power ground

Pin 2    Transmitted Data (SD) -- data originated by terminal

Pin 3    Received Data (RD) -- data originated at remote sender

Pin 4    Request to Send (RTS) -- signal to modem indicating ready to transmit --always held high by the terminal when power is on.

Pin 7    Signal Ground -- common ground reference between terminal and modem

Pin 8    Data Carrier Detect (DCD) -- signal to terminal indicating the modem has received carrier from the remote device.

Pin 20    Data Terminal Ready (DTR) -- signal to modem, always on except during disconnect and/or power off

A call may be originated at the terminal or at the remote host computer. Either can send data or receive data regardless of where the call was originated. The terminal can receive messages any time it is called, provided that the power is on.

When the receive buffer is approximately 50% full, an XOFF character is sent to the host. When the buffer empties to 10% full, an XON character is sent to the host to indicate that the host may resume sending. The XOFF and XON characters are DC3 and DC1, respectively, when in the Normal mode. In XT and AT1 mode the XOFF character is 67 Hex and the XON character is 65 Hex. In AT2 mode, there is no flow control.

## Auxiliary Port
DCE (Data Communications Equipment) Port
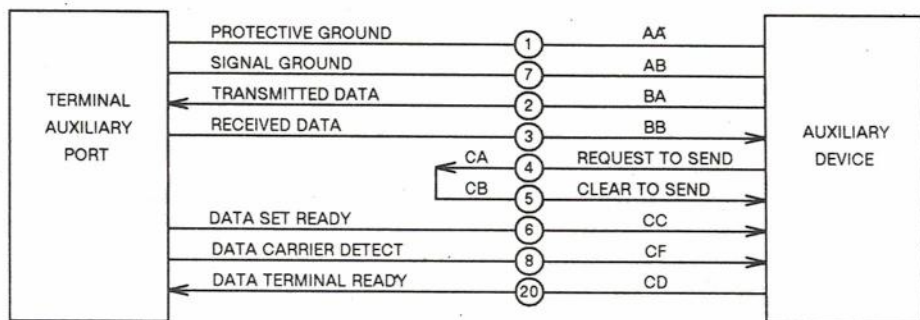


**Figure 9–8**    Auxiliary Device Cable Leads

---

**Note:** Request To Send and Clear To Send are tied together at the terminal.

**Table 9-2**   Auxiliary Port Interface Pins

Pin 1    Protective Ground -- equipment frame and ac power ground

Pin 2    Transmitted Data (SD) -- data originated by the auxiliary device

Pin 3    Received Data (RD) -- data originated at the terminal

Pin 4    Request to Send (RTS) -- tied to Clear to Send at terminal.

Pin 5    Clear to Send (CTS) -- tied to RTS at terminal.

Pin 6    Data Set Ready (DSR) -- signal to auxiliary device from terminal (always on when terminal power is on).

Pin 7    Signal Ground (AB) -- common ground reference between terminal and auxiliary device.

Pin 8    Data Carrier Detect (DCD) -- signal to auxiliary device from the terminal (always on when terminal power is on).

Pin 20   Data Terminal Ready (DTR) -- signal from auxiliary device to terminal.

While in Media Copy or Print On-Line mode, data transmitted from the auxiliary device to the auxiliary port except DC1 and DC3 is passed on for transmission to the main port with the 8th bit cleared.  The DC1/DC3 flow control characters are recognized by the terminal and acted on accordingly.

## Printer Operations

The 605 BCT terminal is capable of supporting an auxiliary printer. The interface leads for the auxiliary port are defined in Figure 9-8 and described in Table 9-2. The printer speed must match the line speed.

The terminal can be operated with AT&T Printer Models, 455, 458, 475, 5310, and 5320. Limitations to the use of the 458 and 475 Printers are:

458 Printer --    Pins 10, 18, 19, and 21 (current loop leads), pin 11 (reverse channel lead), and pin 14 (secondary transmited data) of the printer are not bridged through to the 605 BCT terminal main port.

475 Printer --    Pin 14 (fault indication) of the printer is not bridged through to the 605 BCT terminal main port.

Pin 4 (Clear to Send) reflects the status of pin 5 (Request to Send) from the printer.

Flow control from the printer (DC1 for X-on, DC3 for X-off) is recognized by the 605 BCT. The terminal will stop sending data to the printer when a DC3 is received. Data will again be transmitted when a DC1 is received. When a DC3 from the printer is not followed by a DC1 within 30 seconds, the "mc", "pl", or "ps" indicator becomes reverse video blinking to indicate a possible printer problem. Receiving a DC1 from the printer or dropping Data Terminal Ready (DTR) on the AUX port clears the x-off condition.

When a received escape sequence is one that the terminal recognizes, the sequence will be acted upon and the data is sent to the printer if the Print On-Line indicator, "pl" is displayed. When media copy is being used, the data is sent only to the printer.

## Print On-Line

Print On-Line is activated and deactivated by depressing the PrtOn key (with the Ctrl key) on the keyboard when in the Normal mode. It can also be deactivated by depressing the StPrt key (with the Ctrl key) in the Normal mode. When Print On-Line is on, data from the line is sent to the printer with space parity while in Normal mode. All eight bits are sent to the printer while in PC mode. A "pl" indicator is displayed between the F4 and F5 labels.

Receiving the escape sequence ESC[?5i or receiving the DC2 control character also causes the terminal to enter the Print On-Line mode and turns on the "pl" status indicator.

When the terminal has Local Echo on, keyboarded data is sent to the printer while in the Print On-Line mode.

Entering the Setup mode, or receiving the escape sequence ESC[?4i, or receiving the DC4 control character will turn Print On-Line off and will extinguish the "pl" indicator.

If a DC3 from the printer is not followed by a DC1 within thirty (30) seconds, the "pl" indicator becomes reverse video blinking to indicate a possible problem with the printer.

## Print Screen

A Print Screen function is provided on the terminal and is accessed in the Normal mode via the PrtSc key (with the Ctrl key) on the keyboard or the Print Screen escape sequence.

When this key is depressed, characters from the screen are sent to the printer with space parity while in Normal mode. All eight bits are sent when in PC mode. The current Print Extent mode determines whether the full screen or only the scrolling region is printed. A "ps" status indicator appears on the display while the printer is active and disappears when the printing is finished. The escape sequence ESC[0i received from the host causes the screen to be printed. Null characters are converted to the space (hex 20) character. The terminal transmits a carriage return and line feed after the last printable character of a line. A line of double-height characters is printed as two identical lines of single-width characters. Double-width characters print as single-width characters on a single line.

Attributes, including underline, are ignored.

A depression of the StPrt (Stop Print) key (with the Ctrl key) in the Normal mode terminates all printing functions. If the display had been stopped by the printer due to a full printer buffer, it is immediately restarted by a depression of the StPrt key.

If a DC3 from the printer is not followed by a DC1 within thirty (30) seconds, the "ps" indicator becomes reverse video blinking to indicate a possible problem with the printer.

## Media Copy

Data can be sent to the printer without being displayed on the terminal screen by using the Media Copy escape sequences. The sequence ESC[5i received on line will put the terminal into the Media Copy mode, and ESC[4i causes the terminal to leave the mode. When Media Copy is on, all data sent to the terminal is sent directly to the printer and is not displayed on the screen.

When the send parity option is set to "none" or when in PC mode, all 8-bits are sent to the printer. Otherwise, 7 data bits are sent and the 8th bit is sent as space. The keyboard is active during Media Copy. Data echoed to the terminal (local or remote) is sent directly to the printer.

Media Copy overrides print on-line, and when the terminal is in the Media Copy mode, a "mc" indicator appears on line 26 between the F4 and F5 screen labels.

Data from the printer while in Media Copy is sent to the line except for the DC3/DC1 flow control characters which are recognized by the terminal. If a DC3 from the printer is not followed by a DC1 within thirty (30) seconds, the "mc" indicator becomes reverse video blinking to indicate a posssible problem with the printer.

Media Copy is terminated by the following: a line disconnect, entering Setup mode, receiving the Media Copy mode off escape sequence, and depression of the StPrt key (with the Ctrl key) in the Normal mode.

# On-Line Signaling

In asynchronous signaling, start and stop bits are required in the bit stream to identify the beginning and ending of a character. The start bit is a positive going transition (space) on a marking line. It signals that the following voltage transition will be an ASCII character. Each group of character bits is followed by a stop bit. The stop bit is a negative going transition (mark) of what would be the 9th information bit. This signaling pattern is commonly referred to as "10 bit code" or "10 unit code."

(Perfect waveform for ASCII character M with even parity shown.)
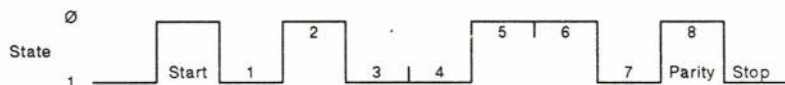


State 1 (mark)/Off = -5 to -25 Vdc
State Ø (space)/On = +5 to +25 Vdc

**Figure 9–9**   On-Line Signaling

# Chapter 10: Maintenance

## Contents

# If Trouble Occurs

This section provides troubleshooting information to help the user isolate a problem and to aid in the reporting of the trouble. This testing should be done before calling for service.

Before reporting trouble, the user should:

- Make sure the ac power cord is plugged in.
- Make sure the power switch is on.
- Check if other terminals are having the same problem.
- Make sure brightness control is turned up.
- Turn off power to the terminal and follow the steps in Table 10-1.

**Table 10–1** Power On Test

| Step | Action | Yes | No |
|------|--------|-----|-----|
| 1 | Turn on power. | | |
| 2 | Did the "605 OK Copyright 1987, AT&T" message appear? | Go to Step 9. | Go to Step 3. |
| 3 | Depress the left Ctrl key with both Shift keys depressed. Did the keyboard bell sound? | Keyboard O.K. Go to Step 4. | Keyboard self-test failed. Report as keyboard trouble. |
| 4 | Depress Esc key with Shift and Ctrl keys depressed. Did trouble message appear? | Report as trouble in:<br>ERROR: Kybd    Keyboard<br>ERROR: ram     Display<br><br>**Note 1:** A failure may result in no error message appearing. Report as trouble in display.<br>**Note 2:** This test causes Data Terminal Ready (DTR) to drop. | Go to Step 5. |
| 5 | Is cursor present? | Go to Step 7. | Go to Step 6. |
| 6 | Turn up brightness. Is cursor present? | Return to Step 2. | Go to Step 7 |
| 7 | Is terminal connected to a 115vac source? | Go to Step 8. | Turn terminal off, connect ac. Return to Step 1. |
| 8 | Is 115vac source operating properly? | Report as display trouble | Turn terminal off and disconnect. Repair source, reconnect, and return to Step 1. |
| 9 | Are User Fkey screen labels present? | The terminal is basically operational. If trouble is still present, check terminal options. If options are correct, contact service representative. | Check Labels option. Repeat test procedure. If test results are the same, report as terinal trouble. |

**Note:** Options can cause erratic operations, so it is important to ensure they are set up properly. When the terminal is installed, the existing option values should be checked to ensure the trouble is not option related.

If the trouble still exists after the tests have been run and the options verified, report the trouble to your service representative giving as much information as possible, or refer to the service manual.

To order copies of the AT&T 605 BCT Service Manual:

Contact:  Your AT&T Information Systems Account Team

<div align="center">Or</div>

Call:  AT&T Technologies, Inc. on 800-432-6600

<div align="center">Or</div>

Write:  AT&T Customer Information Center
P.O. Box 19901
Indianapolis, Indiana 46219

Order:  Document No. 582-618-030IS
ComCode 501002646

# Routine Cleaning

Keeping the terminal clean is an easy matter. Use a slightly damp paper towel to wash or clean glass, plastic, and painted surfaces.

When oily substances are present on the terminal, a fair amount of rubbing may be required. This is the recommended method of cleaning rather than using chemical solvents.

**Warning:** Unpainted plastic parts may be damaged by the use of chemicals, cosmetics, and high heat.

**Warning:** Painted parts may be damaged by the use of chemicals, glues, adhesive-backed tapes, and adhesive-backed labels.

# Spills

Care should be taken not to spill any liquid into the keyboard. If a spill occurs, it is imperative that the terminal be turned off immediately. The keyboard should then be disconnected and turned upside down and all excess liquids allowed to drain. The keyboard should be left upside down for several hours until completely dry. If the keyboard self-test fails when reconnected after the drying time, call for service.

# Appendix A: Specifications

## Dimensions and Weight
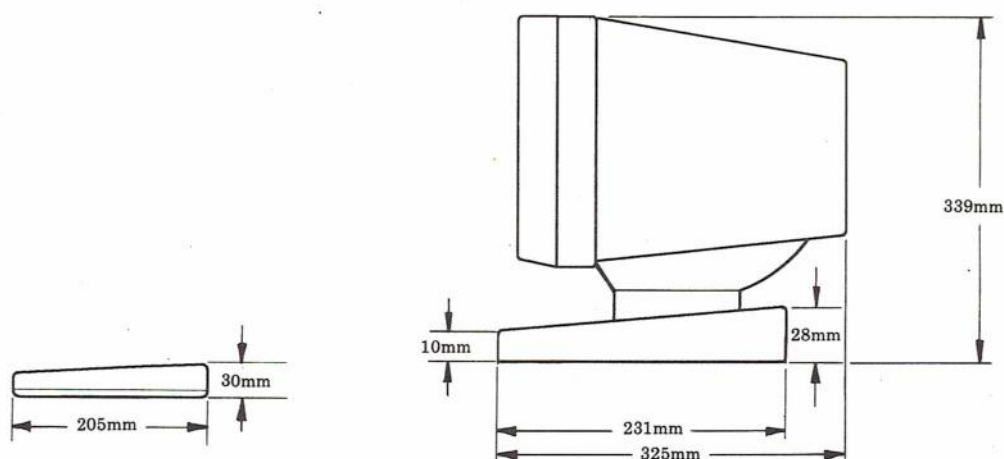


**Figure A–1**   Dimensions and Weights

The maximum weight of the complete terminal, including the keyboard, is 25 pounds.
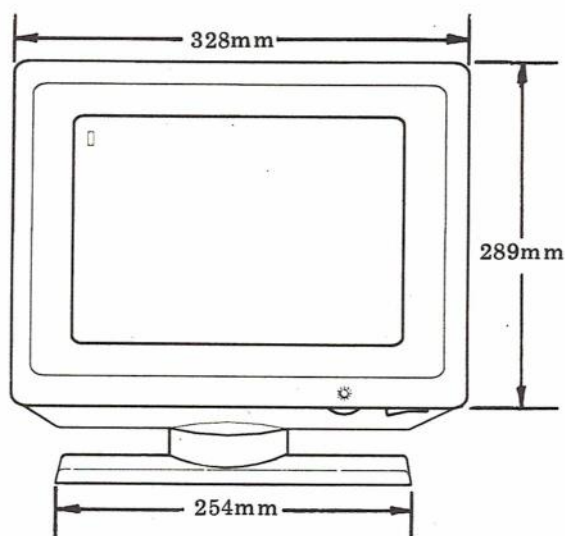
**Figure A–2**   Dimensions and Weights (Continued)

## Environmental Requirements

Temperature
    Storage (boxed)    -40 C to +65 C
    Operating    +4.5 C to +40 C
    The terminal may also be operated up to 50 C for a maximum of 72 consecutive hours but not more than 15 days per year provided that the ventilation slots in the display are not obstructed.

Relative Humidity
    20% to 90% noncondensing

Altitude
    Shipping    Sea Level to 50,000 ft. (15,240m)
    Storage    Sea Level to 50,000 ft. (15,240m)
    Operating    Sea Level to 10,000 ft. (3048m)

## Power

Line Voltage    90 to 132 Vac

Frequency    60 Hz

Power    40 W

Power Cord    6' 7" detachable
One end has a standard 3-prong, grounded connector (NEMA 5-15 type) for wall receptacle. The other end is a 3-blade receptacle (mates with IEC 320-type connector) which attaches to the display.

## Display

| | |
|---|---|
| CRT | 14" diagonal in green or amber phosphor. |
| Character Size | 80- 7 x 9 dot matrix plus 2 descenders<br>132- 5 x 7 dot matrix plus 2 descenders |
| Display Area | 9.5" by 7.0" |
| Character Set | 6 character sets |

## Keyboard

| | |
|---|---|
| General | 102-key attachable with coiled cord |
| Keyclick | Optional audible feedback for key depression |

## Line Communications

Type            Full duplex character-at-a-time

Speed        300 to 38400 (1 stop bit) baud
asynchronous ASCII Code or Hex
scan codes in PC modes.

Parity         Even, odd, none, 8th bit mark or 8th bit
space

Flow Control   XON and XOFF buffer full signaling

## Printer Communications

Type            Full duplex

Speed        Same speed as the main port, up to
38400 baud.

Code           ASCII

Parity         8th bit space, or data if in Media Copy
with Send Parity set to "none".
8 data bits in PC mode.

Flow Control   XON/XOFF (DC1/DC3)

## Electromagnetic Interference

Other electrical apparatus (e.g., printers) may cause visual
interference, especially if they are powered at a different line frequency
than the refresh rate of the 605 BCT. This and other types of
interference may be avoided by maintaining a distance of
approximately one meter (3.3 feet) between the 605 BCT and the other
electrical apparatus.

# Appendix B: Connectors

## PC Workstations

Special cabling must be used when connecting the terminal directly to a UNIX** PC workstation. The following cable information may be useful when connecting your terminal to a UNIX** PC.

| PE Code | Length | Comcode Number |
|---------|--------|----------------|
| 2724-99G | 7ft | 524565959 |
| 2724-99L | 12ft | 524565967 |
| 2724-99S | 25ft | 524565975 |
| 2724-99V | 50ft | 524565983 |

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** *UNIX* is a trademark of AT&T
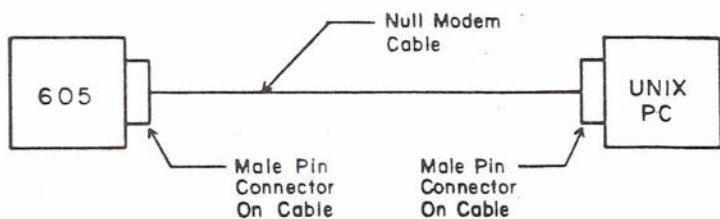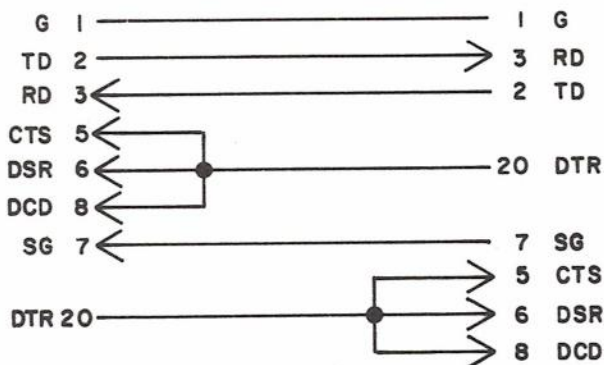
**Figure B-1**   PC Connection

# 3B Host Connectors

## 3B5, 3B15, and 3B20

A male to female Null Modem cable must be used to connect the 605 BCT to a 3B5, 3B15, or a 3B20. The pin connections and ordering information is as follows:

| PE Code | Length | Comcode Number |
|---------|--------|----------------|
| 2724-92G | 6 ft. | 524163417 |
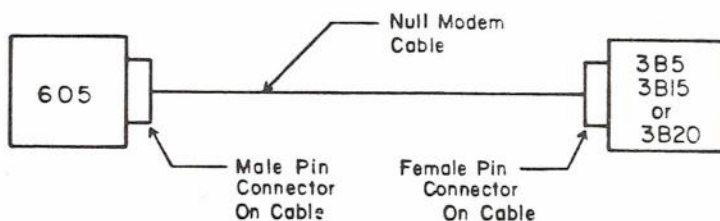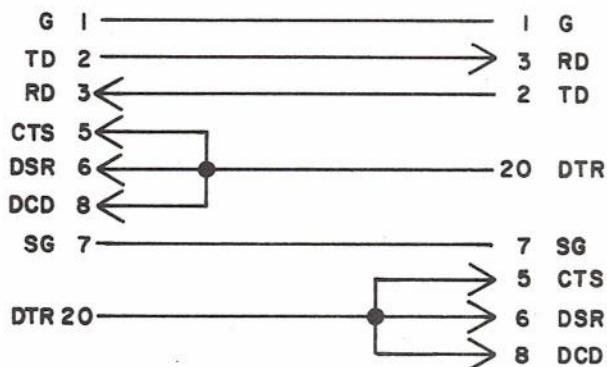




Figure B—2    3B5, 3B15, or 3B20 Connections

## 3B2 Direct Connect

Special cabling must be used when connecting the terminal directly to a 3B2 Computer. The following cable information may be useful.

| Adapter Connector | | 8 Pin Modular Cord | | |
|---|---|---|---|---|
| Comcode | PE Code | Comcode | PE Code | Length |
| 403602717* | 2750-C09 | 403600968 | 2725-16G | 7 feet |
| | | 403600976 | 2725-16N | 14 feet |
| | | 403600984 | 2725-16S | 25 feet |
| | | 403600992 | 2725-16V | 50 feet |

* Reference TRW # 232 21 25 010
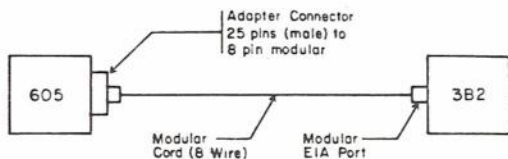


**Figure B–3**   3B2 Direct Connect

## External Modems

When an external modem is to be used, the following cables are used to connect the modem to the terminal.

| PE Code | Length | Comcode |
|---------|--------|---------|
| 2724-14G | 7 ft. | 524161742 |
| 2724-14L | 12 ft. | 524161759 |
| 2724-14S | 25 ft. | 524161767 |
| 2724-14V | 50 ft. | 524161775 |

## 455, 458 and 475 Printers

When an optional 455, 458 or 475 printer is to be used, one of the following cables must be ordered.

| PE Code | Length | Comcode |
|---------|--------|---------|
| 2724-14G | 7 ft. | 524161742 |
| 2724-14L | 12 ft. | 524161759 |
| 2724-14S | 25 ft. | 524161767 |
| 2724-14V | 50 ft. | 524161775 |

## 5310 and 5320 Printers

When an optional 5310 or 5320 printer is to be used, one of the following cables must be used.

| PE Code | Length | Comcode |
|---------|--------|---------|
| N/A | 7 ft. | 524080652 |
| 2724-01L | 12 ft. | 524080660 |
| 2724-01S | 25 ft. | 524080678 |
| 2724-01V | 50 ft. | 524080686 |

# Appendix C: Character Sets

The following tables identify the various character sets of the 605 BCT by hexadecimal code and displayed character.

# Resident Character Sets

**Table C−1**   United States ASCII Set

ESC(B = G0
ESC)B = G1

| $H_{E_X}$ | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Ø | | $D_L$ | SPACE | Ø | @ | P | ` | p |
| 1 | $S_H$ | $D_1$ | ! | 1 | A | Q | a | q |
| 2 | $S_X$ | $D_2$ | " | 2 | B | R | b | r |
| 3 | $E_X$ | $D_3$ | # | 3 | C | S | c | s |
| 4 | $E_T$ | $D_4$ | $ | 4 | D | T | d | t |
| 5 | $E_Q$ | $N_K$ | % | 5 | E | U | e | u |
| 6 | $A_K$ | $S_Y$ | & | 6 | F | V | f | v |
| 7 | ⚠ | $E_B$ | ' | 7 | G | W | g | w |
| 8 | $B_S$ | $C_N$ | ( | 8 | H | X | h | x |
| 9 | → | $E_M$ | ) | 9 | I | Y | i | y |
| A | ≡ | $S_B$ | * | : | J | Z | j | z |
| B | $V_T$ | $E_C$ | + | ; | K | [ | k | { |
| C | $F_F$ | $F_S$ | , | < | L | \ | | | | |
| D | ← | $G_S$ | - | = | M | ] | m | } |
| E | $S_O$ | $R_S$ | . | > | N | ^ | n | ~ |
| F | $S_I$ | $U_S$ | / | ? | O | _ | o | /// |

# Table C–2    United Kingdom Set

ESC(A = G0
ESC)A = G1

| $H_{E_X}$ | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Ø | | $D_L$ | SPACE | Ø | @ | P | ` | p |
| 1 | $S_H$ | $D_1$ | ! | 1 | A | Q | a | q |
| 2 | $S_X$ | $D_2$ | '' | 2 | B | R | b | r |
| 3 | $E_X$ | $D_3$ | £ | 3 | C | S | c | s |
| 4 | $E_T$ | $D_4$ | $ | 4 | D | T | d | t |
| 5 | $E_Q$ | $N_K$ | % | 5 | E | U | e | u |
| 6 | $A_K$ | $S_Y$ | & | 6 | F | V | f | v |
| 7 | ⌂ | $E_B$ | ' | 7 | G | W | g | w |
| 8 | $B_S$ | $C_N$ | ( | 8 | H | X | h | x |
| 9 | → | $E_M$ | ) | 9 | I | Y | i | y |
| A | ≡ | $S_B$ | * | : | J | Z | j | z |
| B | $V_T$ | $E_C$ | + | ; | K | [ | k | { |
| C | $F_F$ | $F_S$ | , | < | L | \ | l | ¦ |
| D | ← | $G_S$ | - | = | M | ] | m | } |
| E | $S_O$ | $R_S$ | . | > | N | ^ | n | ~ |
| F | $S_I$ | $U_S$ | / | ? | O | _ | o | ⁄⁄ |

**Table C−3**   Special Character and Line Drawing Set

ESC(0 = G0
ESC)0 = G1

| $^H E_X$ | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Ø | | $D_L$ | SPACE | Ø | @ | P | ◆ | — |
| 1 | $S_H$ | $D_1$ | ! | 1 | A | Q | ▦ | — |
| 2 | $S_X$ | $D_2$ | " | 2 | B | R | $H_T$ | — |
| 3 | $E_X$ | $D_3$ | # | 3 | C | S | $F_F$ | — |
| 4 | $E_T$ | $D_4$ | $ | 4 | D | T | $C_R$ | ├ |
| 5 | $E_Q$ | $N_K$ | % | 5 | E | U | $L_F$ | ┤ |
| 6 | $A_K$ | $S_Y$ | & | 6 | F | V | ° | ⊥ |
| 7 | ⌂ | $E_B$ | ' | 7 | G | W | ± | ⊤ |
| 8 | $B_S$ | $C_N$ | ( | 8 | H | X | $N_L$ | \| |
| 9 | ⇒ | $E_M$ | ) | 9 | I | Y | $V_T$ | ≤ |
| A | ≡ | $S_B$ | * | : | J | Z | ⌟ | ≥ |
| B | $V_T$ | $E_C$ | + | ; | K | [ | ⌐ | π |
| C | $F_F$ | $F_S$ | , | < | L | \ | ⌐ | ≠ |
| D | ← | $G_S$ | - | = | M | ] | └ | £ |
| E | $S_O$ | $R_S$ | . | > | N | ^ | + | ● |
| F | $S_I$ | $U_S$ | / | ? | O | BLANK | — | ⫽ |

**Table C–4**  Securities Industry Set

ESC(1 = G0
ESC)1 = G1

| H E X | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| Ø | | $D_L$ | SPACE | Ø | 1/4 | P | ` | p |
| 1 | $S_H$ | $D_1$ | 1/8 | 1 | A | Q | a | q |
| 2 | $S_X$ | $D_2$ | " | 2 | B | R | b | r |
| 3 | $E_X$ | $D_3$ | # | 3 | C | S | c | s |
| 4 | $E_T$ | $D_4$ | $ | 4 | D | T | d | t |
| 5 | $E_Q$ | $N_K$ | % | 5 | E | U | e | u |
| 6 | $A_K$ | $S_Y$ | & | 6 | F | V | f | v |
| 7 | ⏻ | $E_B$ | ' | 7 | G | W | g | w |
| 8 | $B_S$ | $C_N$ | ( | 8 | H | X | h | x |
| 9 | → | $E_M$ | ) | 9 | I | Y | i | y |
| A | ≡ | $S_B$ | 1/2 | : | J | Z | j | z |
| B | $V_T$ | $E_C$ | + | ; | K | 7/8 | k | { |
| C | $F_F$ | $F_S$ | , | < | L | \ | l | ¦ |
| D | ← | $G_S$ | - | = | M | 3/4 | m | } |
| E | $S_O$ | $R_S$ | . | > | N | 3/8 | n | ~ |
| F | $S_I$ | $U_S$ | / | ? | O | 5/8 | o | /// |

**Table C–5**   Mosaic Set

ESC(} = G0
ESC)} = G1



Mosaic Set character table. Column headers H/EX (hex) with columns Ø, 1, 2, 3, 4, 5, 6, 7. Rows Ø through F.

| H EX | Ø | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------|---|---|---|---|---|---|---|---|
| Ø | | $D_L$ | | | | | | |
| 1 | $S_H$ | $D_1$ | | | | | | |
| 2 | $S_X$ | $D_2$ | | | | | | |
| 3 | $E_X$ | $D_3$ | | | | | | |
| 4 | $E_T$ | $D_4$ | | | | | | |
| 5 | $E_Q$ | $N_K$ | | | | | | |
| 6 | $A_K$ | $S_Y$ | | | | | | |
| 7 | ⌂ | $E_B$ | | | | | | |
| 8 | $B_S$ | $C_N$ | | | | | | |
| 9 | → | $E_M$ | | | | | | |
| A | ≡ | $S_B$ | | | | | | |
| B | $V_T$ | $E_C$ | | | | | | |
| C | $F_F$ | $F_S$ | | | | | | |
| D | ← | $G_S$ | | | | | | |
| E | $S_O$ | $R_S$ | | | | | | |
| F | $S_I$ | $U_S$ | | | | | | |

**Table C–6**   PC Equivalent

| $^H E_X$ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | BLANK (NULL) | ▶ | BLANK (SPACE) | 0 | @ | P | ` | p |
| 1 | ☺ | ◀ | ! | 1 | A | Q | a | q |
| 2 | ☻ | ↕ | " | 2 | B | R | b | r |
| 3 | ♥ | ‼ | # | 3 | C | S | c | s |
| 4 | ♦ | ¶ | $ | 4 | D | T | d | t |
| 5 | ♣ | § | % | 5 | E | U | e | u |
| 6 | ♠ | ▬ | & | 6 | F | V | f | v |
| 7 | • | ↕ | ' | 7 | G | W | g | w |
| 8 | ◘ | ↑ | ( | 8 | H | X | h | x |
| 9 | ○ | ↓ | ) | 9 | I | Y | i | y |
| A | ◙ | → | * | : | J | Z | j | z |
| B | ♂ | ← | + | ; | K | [ | k | { |
| C | ♀ | ∟ | , | < | L | \ | l | ¦ |
| D | ♪ | ↔ | – | = | M | ] | m | } |
| E | ♫ | ▲ | . | > | N | ^ | n | ~ |
| F | ☼ | ▼ | / | ? | O | _ | o | △ |

Table C-7    PC Equivalent (Upper 128 Characters)

| HEX | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| 0 | Ç | É | á | ▓ | └ | ╨ | α | ≡ |
| 1 | ü | æ | í | ▊ | ┴ | ╤ | ß | ± |
| 2 | é | Æ | ó | ▒ | ┬ | ╥ | Γ | ≥ |
| 3 | â | ô | ú | │ | ├ | ╙ | π | ≤ |
| 4 | ä | ö | ñ | ┤ | ─ | ╘ | Σ | ⌠ |
| 5 | à | ò | Ñ | ╡ | ┼ | ╒ | σ | ⌡ |
| 6 | å | û | ª | ╢ | ╞ | ╓ | µ | ÷ |
| 7 | ç | ù | º | ╖ | ╟ | ╫ | τ | ≈ |
| 8 | ê | ÿ | ¿ | ╕ | ╚ | ╪ | Φ | ° |
| 9 | ë | Ö | ⌐ | ╣ | ╔ | ┘ | Θ | · |
| A | è | Ü | ¬ | ║ | ╩ | ┌ | Ω | · |
| B | ï | ¢ | ½ | ╗ | ╦ | █ | δ | √ |
| C | î | £ | ¼ | ╝ | ╠ | ▄ | ∞ | ⁿ |
| D | ì | ¥ | ¡ | ╜ | = | ▌ | φ | ² |
| E | Ä | ₧ | « | ╛ | ╬ | ▐ | ε | ■ |
| F | Å | ƒ | » | ┐ | ╧ | ▀ | ∩ | BLANK (SPACE) |

# Appendix D: Escape Sequence Reference

## Single Character Escape Sequences

ESC 7     Save Cursor Position and Attributes
ESC 8     Restore Cursor Position and Attributes
ESC D    Index (Cursor Down)
ESC E    Newline
ESC M   Reverse Index (Cursor Up)
ESC Q   Save Into Nonvolatile Options
ESC R   Restore Nonvolatile Options
ESC c    Device Reset (Normal mode only)
ESC =    Alternate Keypad Mode (Normal mode only)
ESC >    Numeric Keypad Mode (Normal mode only)
ESC U    Enter Monitor Mode (PC mode only)
ESC X    Exit Monitor Mode (PC mode only)
ESC u    Exit Monitor Mode (PC mode only)

## Repetitive Parameter Escape Sequences

ESC [ pn A   Cursor Up (number of lines)
ESC [ pn B   Cursor Down (number of lines)
ESC [ pn C   Cursor Right (number of columns)
ESC [ pn D   Cursor Left (number of columns)
ESC [ pn L   Insert Line (number of blank lines)
ESC [ pn M  Delete Line (number of lines)
ESC [ pn P   Delete Character (number of characters)
ESC [ pn Z   Cursor Back Tab (number of tab stops)
ESC [ pn b   Repeat Last Character (number of times)
ESC [ pn @  Insert Space Character (number of spaces)

## Absolute Numeric Parameter Escape Sequences

ESC [ row;column H   Cursor Positioning
ESC [ row;column R   Cursor Position Report Response
                              (Sent from terminal in Normal mode only)
ESC [ row;column f   Cursor Positioning
ESC [ top; bottom r   Set Split Screen User Defined Scrolling Region
ESC [ row;column x   Cursor Positioning to Status Line (Normal mode only)


## Selective Parameter Escape Sequences

ESC [ ps J                     Clear Characters and Attributes From Screen
                                ps = 0 Clear to End of Screen
                                ps = 1 Clear to Start of Screen
                                ps = 2 Clear Entire Screen

ESC [ ps K                     Clear Characters and Attributes From Cursor Lir
                                ps = 0 Clear to End of Line
                                ps = 1 Clear to Start of Line
                                ps = 2 Clear Entire Line

ESC [ 0 c or ESC [ c         Software Configuration Request
                                (Normal mode only)

ESC [ ? ps1;ps2;ps3 c      Terminal Software Configuration Response to
                                ESC [ 0 c or ESC [ c (sent from terminal
                                in Normal mode only)
                                    ps1 = Terminal Indicator
                                        (7 for the 605 BCT)
                                    ps2 = Terminal Type (5 for 605 BCT)
                                    ps3 = Firmware Release (1)

| | |
|---|---|
| ESC [ > 0 c or ESC [ > c | Hardware Configuration Request<br>(Normal mode only) |
| ESC [ > ps1 c | Hardware Configuration Response to<br>ESC [ > 0 c or ESC [ > c (sent from terminal<br>in Normal mode only)<br>    ps1 = Keyboard Type<br>        0 = no keyboard or keyboard error<br>        4 = 102-key keyboard |
| ESC [ ps;...;ps h | Set Mode<br>    ps = 2  Keyboard Lock (Normal Mode only)<br>    ps = 4  Insert Mode On<br>    ps = 12  Local Echo Off<br>    ps = 13  Monitor Mode On<br>    ps = 20  Newline on Line Feed Off |
| ESC [ ? ps;...;ps h | Set Private Mode<br>    ps = 3  132 Column<br>    ps = 4  Smooth Scroll<br>    ps = 5  Reverse Video<br>    ps = 6  Turn Origin Mode On<br>    ps = 7  Line Autowrap On<br>    ps = 10  Blank Screen<br>    ps = 11  Underscore Cursor<br>    ps = 12  Cursor Blink<br>    ps = 13  Labels Off<br>    ps = 15  Check Parity to Yes<br>    ps = 16  Key Click On<br>    ps = 18  Print Termination On<br>    ps = 19  Print Extent On<br>    ps = 25  Cursor On |

| | |
|---|---|
| ESC [ 0 i | Print Screen |
| ESC [ 4 i | Exit Media Copy |
| ESC [ 5 i | Enter Media Copy |
| ESC [ ? 4 i | Turn Off Print On Line |
| ESC [ ? 5 i | Turn On Print On Line |
| ESC [ ps;...;ps l | Reset Mode |
| |     ps = 2 Keyboard Unlock (Normal Mode only) |
| |     ps = 4 Insert Mode Off |
| |     ps = 12 Local Echo On |
| |     ps = 13 Monitor Mode Off |
| |     ps = 20 Newline On Line Feed Off |
| ESC [ ? ps;...;ps l | Reset Private Mode |
| |     ps = 3 80 Column |
| |     ps = 4 Jump Scroll |
| |     ps = 5 Normal Screen |
| |     ps = 6 Origin Mode Off |
| |     ps = 7 Line Autowrap Off |
| |     ps = 10 Unblank Screen |
| |     ps = 11 Block Cursor |
| |     ps = 12 Cursor Steady |
| |     ps = 13 Labels On |
| |     ps = 15 Parity Check to No |
| |     ps = 16 Key Click Off |
| |     ps = 18 Print Termination Mode Off |
| |     ps = 19 Print Extent Mode Off |
| |     ps = 25 Cursor Off (invisible) |

| | |
|---|---|
| ESC [ ps m | Set Character Attributes (Graphic Rendition) |
| |     ps = 0 Normal |
| |     ps = 1 Bold |
| |     ps = 2 Subdued |
| |     ps = 4 Underscore |
| |     ps = 5 Blink |
| |     ps = 7 Reverse Video |
| |     ps = 8 Blank |
| ESC [ ps n | Device Status Request (Normal mode only) |
| |     ps = 0 Terminal Status Test Passed |
| |     ps = 3 Terminal Status Test Failed |
| |     ps = 5 Request Terminal Status |
| |     ps = 6 Screen Cursor Position Request |
| ESC [ ? ps n | Printer Status Request (Normal mode only) |
| |     ps = 10 Printer Status - Ready |
| |     ps = 11 Printer Status - No Longer Ready |
| |     ps = 15 Request Printer Status |
| ESC [ ps p | Select Screen Labels (Normal mode only) |
| |     ps = 0 System |
| |     ps = 1 User |
| |     ps = 2 Blank |

ESC [ ps1;pn;ps2;ps3 q    Set Fkey String
    label + string
                                      ps1 = Fkey Number (1 Through 8)
                                      (ps1 can be extended to include 9
                                      through 14 if the function key is a
                                      System Key).
                                      pn = Number of Characters in String
                                      1 Through 8 for System Fkey or
                                      1 Through 35 for User Fkey.
                                      If 0, labels only are downloaded.
                                    ps2 = Ignored by Terminal
                                    ps3 = User/Sys Fkey
                                      0 = Sys Fkey
                                      1 = User Fkey
                                      3 = Shifted System Fkey
                                      label + string = a 16 character label
                                    (must be 16) followed immediately by
                                    the string of characters as defined
                                    by pn in the escape sequence.

ESC [ ps1;ps2 ¦

Download of Options
Speed Option ps1 = 1
    ps2 = 0  1200 Baud
    ps2 = 1  2400 Baud
    ps2 = 2  4800 Baud
    ps2 = 3  9600 Baud
    ps2 = 4 19200 Baud
    ps2 = 7 38400 Baud
    ps2 = 6    300 Baud

Send Parity Option ps1 = 3
    ps2 = 0 Even
    ps2 = 1 Odd
    ps2 = 2 Mark
    ps2 = 3 Space
    ps2 = 4 None

RETURN Key ps1 = 8
    ps2 = 0 CR
    ps2 = 1 LF
    ps2 = 2 CR/LF

ENTER Key ps1 = 25
    ps2 = Number of Characters
    followed by a string of ps2
    characters that become the
    ENTER key definition. The
    character string is equal
    to ps2 characters.

Terminal Mode ps1 = 50
    ps2 = 0 Normal
    ps2 = 1 XT Mode
    ps2 = 2 AT1 Mode
    ps2 = 3 AT2 Mode

ESC [ s                          Upload Options Request (Normal mode only)

ESC [ ps1ps2...ps s              Terminal Options Upload (Normal mode only)
    ps1 = 0
    ps2 = Speed option
        1 =  1200 bps
        2 =  2400 bps
        3 =  4800 bps
        4 =  9600 bps
        5 = 19200 bps
        7 =   300 bps
        8 = 38400 bps
    ps3 = Send Parity option
        1 = even
        2 = odd
        3 = mark
        4 = space
        5 = none
    ps4 = Check Parity option
        1 = no
        2 = yes
    ps5 = Local Echo option
        1 = off
        2 = on
    ps6 = Monitor Mode option
        1 = off
        2 = on
    ps7 = Autowrap option
        1 = on
        2 = off
    ps8 = Newline on LF option
        1 = no
        2 = yes
    ps9 = Return Key option
        1 = CR
        2 = LF
        3 = CR/LF
    ps10 = 0
    ps11 = Columns option
        1 = 80 columns
        2 = 132 columns
    ps12 = Scrolling region
        1 = jump
        2 = smooth

ps13 = Reverse Video option
   1 = no
   2 = yes
ps14 = Bell option
   5 = off
   6 = on
ps15 = Key Click option
   1 = off
   2 = on
ps16 = Cursor Type option
   1 = block
   2 = line
ps17 = Cursor Blink option
   1 = no
   2 = yes
ps18 = Labels option
   1 = on
   2 = off
ps19 = 0
ps20 = 0
ps21 = 0
ps22 = 0
ps23 = 0
ps24 = 0
ps25 = 0
ps26 = 0
ps27 = Terminal Mode option
   1 = normal
   2 = XT
   3 = AT1
   4 = AT2
ps28 = Swap Delete/Del option
   1 = no
   2 = yes

**Note:** Missing numeric parameters default to 0 (zero) except for the bottom row of a split screen region which defaults to 24, in Normal mode or 25 in PC mode.

## Font Selection Sequence

ESC ( A    Set G0 = United Kingdom Alphabetic
ESC ( B    Set G0 = U.S. ASCII
ESC ( 0    Set G0 = Special Characters and Line Drawing
ESC ( 1    Set G0 = Securities Industry
ESC ( }    Set G0 = Mosaics

ESC ) A    Set G1 = United Kingdom Alphabetic
ESC ) B    Set G1 = U.S. ASCII
ESC ) 0    Set G1 = Special Characters and Line Drawing
ESC ) 1    Set G1 = Securities Industry
ESC ) }    Set G1 = Mosaics

## Display Line Attributes

ESC # 3    Top of a Double-High and Double-Wide Line
ESC # 4    Bottom of a Double-High and Double-Wide Line
ESC # 5    Single-Wide and Single-High Line
ESC # 6    Double-Wide and Single-High Line

## Special Sequence

ESC # 8    Alignment Test

# Appendix E: Terminal Personality Information

The following information is provided for those users that wish to program *UNIX*\*\* hosts with the 605 BCT personality.

## TERM INFO Personality

605|605bct|ATT605|att605|AT&T 605; 80 column; 102key keyboard @(#)605.ti 1.1,
       am,
       xenl,
       hs,
       eslok,
       mir,
       msgr,
       xon,
       cols#80,
       it#8,
       lh#2,
       lines#24,
       lw#8,
       nlab#8,
       wsl#80,
       cbt=\E[Z,
       bel=^G,
       cr=^M,
       csr=\E[%i%p1%d;%p2%dr,
       clear=\E[H\E[J,
       el=\E[K,

---

```
ed=\E[J,
cup=\E[%i%p1%d;%p2%dH,
cud1=\E[B,
home=\E[H,
civis=\E[?25l,
cub1=^H,
cnorm=\E[?25h\E[?12l,
cuf1=\E[C,
ll=\E[24H,
cuu1=\E[A,
cvvis=\E[?12;25h,
dch1=\E[P,
dl1=\E[M,
smacs=^N,
blink=\E[5m,
bold=\E[1m,
dim=\E[2m,
smir=\E[4h,
ich=\E[%p1%d@,
invis=\E[8m,
rev=\E[7m,
smso=\E[7m,
smul=\E[4m,
rmacs=^O,
sgr0=\E[m^O,
rmir=\E[4l,
rmso=\E[m,
rmul=\E[m,
flash=\E[?5h$<200>\E[?5l,
fsl=\E8,
is1=\E[8;0|\E[?3;4;5;13;15l\E[13;20l\E[?7h\E[1?h\E(B\E)0,
is2=\E[0m^O,
is3=\E(B\E)0,
il1=\E[L,
kbs=^H,
kclr=\E[2J,
kdch1=\E[P,
kdl1=\E[M,
kent=^M,
```

```
kcud1=\E[B,
kend=\E[24;1H,
kf1=\EOc,
kf2=\EOd,
kf3=\EOe,
kf4=\EOf,
kf5=\EOg,
kf6=\EOh,
kf7=\EOi,
kf8=\EOj,
kf9=\ENo,
kf10=\ENp,
kf11=\ENq,
kf12=\ENr,
kf13=\ENs,
kf14=\ENt,
kf15=\EOC,
kf16=\EOD,
kf17=\EOE,
kf18=\EOF,
kf19=\EOG,
kf20=\EOH,
kf21=\EOI,
kf22=\EOJ,
kf23=\ENO,
kf24=\ENP,
kf25=\ENQ,
kf26=\ENR,
kf27=\ENS,
kf28=\ENT,
kf29=\EOP,
kf30=\EOQ,
kf31=\EOR,
kf32=\EOS,
kf33=\EOw,
kf34=\EOx,
kf35=\EOy,
kf36=\EOm,
kf37=\EOt,
```

```
        kf38=\EOu,
        kf39=\EOv,
        kf40=\EOl,
        kf41=\EOq,
        kf42=\EOr,
        kf43=\EOs,
        kf44=\EOp,
        kf45=\EOn,
        kf46=\EOM,
        khome=\E[H,
        kil1=\E[L,
        kcub1=\E[D,
        kcuf1=\E[C,
        kind=\E[S,
        kich1=\E[@,
        kpp=\E[V,
        knp=\E[U,
        kri=\E[T,
        kcuu1=\E[A,
        nel=\EE,
        dch=\E[%p1%dP,
        dl=\E[%p1%dM,
        cud=\E[%p1%dB,
        il=\E[%p1%dL,
        cub=\E[%p1%dD,
        cuf=\E[%p1%dC,
        cuu=\E[%p1%dA,
        pfx=\E[%p1%d;%p2%1%02dq\s\s\sF%p1%1d\s\s\s\s\s\s\s\s\s\s\s%p2%s.
        mc4=\E[?4i,
        mc5=\E[?5i,
        rs2=\Ec\E[?3l,
        rc=\E8,
        sc=\E7,
        ind=\ED,
        ri=\EM,
        sgr=\E[0%?%p6%t;1%;%?%p5%t;2%;%?%p2%t;4%;%?%p4%t;5%;%?%p3%p1%|'
7%;%?%p7%t;8%;m%?%p9%t^N%e^O%;,
        ht=\t,
        tsl=\E7\E[25;%i%p1%dx,
```

```
        acsc="aaffggjjkkllmmnnooppqqrrssttuuvvwwxxyyzz{{||}}~~,
        pln=\E[%p1%d;0;0;0q%p2%:-16.16s,
        kcbt=\E[Z,
        smln=\E[p,
        rmln=\E[2p,
        kLFT=\E[  A,
        kRIT=\E[  @,
        el1=\E1K,

605-w|605bct-w|ATT605-w|att605-w|AT&T 605-w 132 column 102 key keyboard @(#)605.ti 1.1,
        cols#132,
        is1=\E[8;0|\E[?4;5;13;15l\E[13;20l\E[?3;7h\E[12h\E(B\E)0,
        wsl#132,
        use=605,
```

# Appendix F: Scan Codes

## Overview

The keyboard generates a unique Hex scan code for each keyswitch, including codes for both depression (make) and release (break).

The keyboard uses the Enhanced XT/AT Communication Mode, with one of the three Scan sets.

The keyswitch and scan code assignments, generated while in the PC mode, are listed on the following pages.

# Scan Set 1 Codes

**Table F–1**   Scan Set 1, XT Scan Codes

| Key No. | Make Code | Break Code |
|:---:|:---:|:---:|
| 1 | 01 | 81 |
| 2 | 3B | BB |
| 3 | 3C | BC |
| 4 | 3D | BD |
| 5 | 3E | BE |
| 6 | 3F | BF |
| 7 | 40 | C0 |
| 8 | 41 | C1 |
| 9 | 42 | C2 |
| 10 | 43 | C3 |
| 11 | 44 | C4 |
| 12 | 57 | D7 |
| 13 | 58 | D8 |
| 15 | 46 | C6 |
| 17 | 29 | A9 |
| 18 | 02 | 82 |
| 19 | 03 | 83 |
| 20 | 04 | 84 |
| 21 | 05 | 85 |
| 22 | 06 | 86 |
| 23 | 07 | 87 |
| 24 | 08 | 88 |
| 25 | 09 | 89 |
| 26 | 0A | 8A |
| 27 | 0B | 8B |
| 28 | 0C | 8C |
| 29 | 0D | 8D |
| 30 | 0E | 8E |
| 34 | 45 | C5 |
| 36 | 37 | B7 |
| 37 | 4A | CA |
| 38 | 0F | 8F |

**Table F–1**   Scan Set 1, XT Scan Codes (Continuation)

| Key No. | Make Code | Break Code |
|---------|-----------|------------|
| 39 | 10 | 90 |
| 40 | 11 | 91 |
| 41 | 12 | 92 |
| 42 | 13 | 93 |
| 43 | 14 | 94 |
| 44 | 15 | 95 |
| 45 | 16 | 96 |
| 46 | 17 | 97 |
| 47 | 18 | 98 |
| 48 | 19 | 99 |
| 49 | 1A | 9A |
| 50 | 1B | 9B |
| 51 | 2B | AB |
| 55 | 47 | C7 |
| 56 | 48 | C8 |
| 57 | 49 | C9 |
| 58 | 4E | CE |
| 59 | 3A | BA |
| 60 | 1E | 9E |
| 61 | 1F | 9F |
| 62 | 20 | A0 |
| 63 | 21 | A1 |
| 64 | 22 | A2 |
| 65 | 23 | A3 |
| 66 | 24 | A4 |
| 67 | 25 | A5 |
| 68 | 26 | A6 |
| 69 | 27 | A7 |
| 70 | 28 | A8 |
| 71 | 1C | 9C |
| 72 | 4B | CB |
| 73 | 4C | CC |
| 74 | 4D | CD |

**Table F–1**   Scan Set 1, XT Scan Codes (Continuation)

| Key No. | Make Code | Break Code |
|---------|-----------|------------|
| 75  | 2A    | AA    |
| 76  | 2C    | AC    |
| 77  | 2D    | AD    |
| 78  | 2E    | AE    |
| 79  | 2F    | AF    |
| 80  | 30    | B0    |
| 81  | 31    | B1    |
| 82  | 32    | B2    |
| 83  | 33    | B3    |
| 84  | 34    | B4    |
| 85  | 35    | B5    |
| 86  | 36    | B6    |
| 88  | 4F    | CF    |
| 89  | 50    | D0    |
| 90  | 51    | D1    |
| 91  | E0 1C | E0 9C |
| 92  | 1D    | 9D    |
| 93  | 38    | B8    |
| 94  | 39    | B9    |
| 95  | E0 38 | E0 B8 |
| 96  | E0 1D | E0 9D |
| 100 | 52    | D2    |
| 101 | 53    | D3    |
| 102 | 7E    | FE    |

**Table F–1**   Scan Set 1, XT Scan Codes (Continuation)

| Key No. | Base Case, or Shift+Num Lock Make/Break | Shift Case Make/Break | Num Lock on Make/Break |
|---|---|---|---|
| 31 | E0 52/E0 D2 | E0 AA E0 52/E0 D2 E0 2A | E0 2A E0 52/E0 D2 E0 AA |
| 32 | E0 47/E0 C7 | E0 AA E0 47/E0 C7 E0 2A | E0 2A E0 47/E0 C7 E0 AA |
| 33 | E0 49/E0 C9 | E0 AA E0 49/E0 C9 E0 2A | E0 2A E0 49/E0 C9 E0 AA |
| 52 | E0 53/E0 D3 | E0 AA E0 53/E0 D3 E0 2A | E0 2A E0 53/E0 D3 E0 AA |
| 53 | E0 4F/E0 CF | E0 AA E0 4F/E0 CF E0 2A | E0 2A E0 4F/E0 CF E0 AA |
| 54 | E0 51/E0 D1 | E0 AA E0 51/E0 D1 E0 2A | E0 2A E0 51/E0 D1 E0 AA |
| 87 | E0 48/E0 C8 | E0 AA E0 48/E0 C8 E0 2A | E0 2A E0 48/E0 C8 E0 AA |
| 97 | E0 4B/E0 CB | E0 AA E0 4B/E0 CB E0 2A | E0 2A E0 4B/E0 CB E0 AA |
| 98 | E0 50/E0 D0 | E0 AA E0 50/E0 D0 E0 2A | E0 2A E0 50/E0 D0 E0 AA |
| 99 | E0 4D/E0 CD | E0 AA E0 4D/E0 CD E0 2A | E0 2A E0 4D/E0 CD E0 AA |

| Key No. | Scan Code Make/Break | Shift Case Make/Break |
|---|---|---|
| 35 | E0 35/E0 B5 | E0 AA E0 35/E0 B5 E0 2A |

| Key No. | Scan Code Make/Break | CTRL Case, SHIFT Case Make/Break | ALT Case Make/Break |
|---|---|---|---|
| 14 | E0 2A E0 37/E0 B7 E0 AA | E0 37/E0 B7 | 54/D4 |

| Key No | Make Code | CTRL Key Pressed |
|---|---|---|
| 16 | E1 1D 45 E1 9D C5 | E0 46 E0 C6 |

**Note 1:**   When the left SHIFT key is held down, the AA/2A shift make/break codes are sent with the other scan codes. When the right SHIFT key is held down, B6/36 is sent. If both SHIFT keys are held down, both sets of codes are sent with the other scan codes.

**Note 2:**   Key 16 is not typematic. All associated scan codes occur on the make of the key.

# Scan Set 2 Codes

**Table F–2**   Scan Set 2, AT1 Scan Codes

| Key No. | Make Code | Break Code |
|---------|-----------|------------|
| 1 | 76 | F0 76 |
| 2 | 05 | F0 05 |
| 3 | 06 | F0 06 |
| 4 | 04 | F0 04 |
| 5 | 0C | F0 0C |
| 6 | 03 | F0 03 |
| 7 | 0B | F0 0B |
| 8 | 83 | F0 83 |
| 9 | 0A | F0 0A |
| 10 | 01 | F0 01 |
| 11 | 09 | F0 09 |
| 12 | 78 | F0 78 |
| 13 | 07 | F0 07 |
| 15 | 7E | F0 7E |
| 17 | 0E | F0 0E |
| 18 | 16 | F0 16 |
| 19 | 1E | F0 1E |
| 20 | 26 | F0 26 |
| 21 | 25 | F0 25 |
| 22 | 2E | F0 2E |
| 23 | 36 | F0 36 |
| 24 | 3D | F0 3D |
| 25 | 3E | F0 3E |
| 26 | 46 | F0 46 |
| 27 | 45 | F0 45 |
| 28 | 4E | F0 4E |
| 29 | 55 | F0 55 |
| 30 | 66 | F0 66 |
| 34 | 77 | F0 77 |
| 36 | 7C | F0 7C |
| 37 | 7B | F0 7B |
| 38 | 0D | F0 0D |

**Table F–2**    Scan Set 2, AT1 Scan Codes (Continuation)

| Key No. | Make Code | Break Code |
|---------|-----------|------------|
| 39 | 15 | F0 15 |
| 40 | 1D | F0 1D |
| 41 | 24 | F0 24 |
| 42 | 2D | F0 2D |
| 43 | 2C | F0 2C |
| 44 | 35 | F0 35 |
| 45 | 3C | F0 3C |
| 46 | 43 | F0 43 |
| 47 | 44 | F0 44 |
| 48 | 4D | F0 4D |
| 49 | 54 | F0 54 |
| 50 | 5B | F0 5B |
| 51 | 5D | F0 5D |
| 55 | 6C | F0 6C |
| 56 | 75 | F0 75 |
| 57 | 7D | F0 7D |
| 58 | 79 | F0 79 |
| 59 | 58 | F0 58 |
| 60 | 1C | F0 1C |
| 61 | 1B | F0 1B |
| 62 | 23 | F0 23 |
| 63 | 2B | F0 2B |
| 64 | 34 | F0 34 |
| 65 | 33 | F0 33 |
| 66 | 3B | F0 3B |
| 67 | 42 | F0 42 |
| 68 | 4B | F0 4B |
| 69 | 4C | F0 4C |
| 70 | 52 | F0 52 |
| 71 | 5A | F0 5A |
| 72 | 6B | F0 6B |
| 73 | 73 | F0 73 |
| 74 | 74 | F0 74 |
| 75 | 12 | F0 12 |
| 76 | 1A | F0 1A |
| 77 | 22 | F0 22 |
| 78 | 21 | F0 21 |

**Table F–2**   Scan Set 2, AT1 Scan Codes (Continutation)

| Key No. | Make Code | Break Code |
|---------|-----------|------------|
| 79 | 2A | F0 2A |
| 80 | 32 | F0 32 |
| 81 | 31 | F0 31 |
| 82 | 3A | F0 3A |
| 83 | 41 | F0 41 |
| 84 | 49 | F0 49 |
| 85 | 4A | F0 4A |
| 86 | 59 | F0 59 |
| 88 | 69 | F0 69 |
| 89 | 72 | F0 72 |
| 90 | 7A | F0 7A |
| 91 | E0 5A | E0 F0 5A |
| 92 | 14 | F0 14 |
| 93 | 11 | F0 11 |
| 94 | 29 | F0 29 |
| 95 | E0 11 | E0 F0 11 |
| 96 | E0 14 | E0 F0 14 |
| 100 | 70 | F0 70 |
| 101 | 71 | F0 71 |
| 102 | 6D | F0 6D |

**Table F–2**   Scan Set 2, AT1 Scan Codes (Continuation)

| Key No. | Base Case, or Shift+Num Lock Make/Break | Shift Case Make/Break | Num Lock on Make/Break |
|---|---|---|---|
| 31 | E0 70/E0 F0 70 | E0 F0 12 E0 70/E0 F0 70 E0 12 | E0 12 E0 70/E0 F0 70 E0 F0 12 |
| 32 | E0 6C/E0 F0 6C | E0 F0 12 E0 6C/E0 F0 6C E0 12 | E0 12 E0 6C/E0 F0 6C E0 F0 12 |
| 33 | E0 7D/E0 F0 7D | E0 F0 12 E0 7D/E0 F0 7D E0 12 | E0 12 E0 7D/E0 F0 7D E0 F0 12 |
| 52 | E0 71/E0 F0 71 | E0 F0 12 E0 71/E0 F0 71 E0 12 | E0 12 E0 71/E0 F0 71 E0 F0 12 |
| 53 | E0 69/E0 F0 69 | E0 F0 12 E0 69/E0 F0 69 E0 12 | E0 12 E0 69/E0 F0 69 E0 F0 12 |
| 54 | E0 7A/E0 F0 7A | E0 F0 12 E0 7A/E0 F0 7A E0 12 | E0 12 E0 7A/E0 F0 7A E0 F0 12 |
| 87 | E0 75/E0 F0 75 | E0 F0 12 E0 75/E0 F0 75 E0 12 | E0 12 E0 75/E0 F0 75 E0 F0 12 |
| 97 | E0 6B/E0 F0 6B | E0 F0 12 E0 6B/E0 F0 6B E0 12 | E0 12 E0 6B/E0 F0 6B E0 F0 12 |
| 98 | E0 72/E0 F0 72 | E0 F0 12 E0 72/E0 F0 72 E0 12 | E0 12 E0 72/E0 F0 72 E0 F0 12 |
| 99 | E0 74/E0 F0 74 | E0 F0 12 E0 74/E0 F0 74 E0 12 | E0 12 E0 74/E0 F0 74 E0 F0 12 |

| Key No. | Scan Code Make/Break | Shift Case Make/Break |
|---|---|---|
| 35 | E0 4A/E0 F0 4A | E0 F0 12 E0 4A/E0 F0 4A E0 12 |

| Key No. | Scan Code Make/Break | CTRL Case, SHIFT Case Make/Break | ALT Case Make/Break |
|---|---|---|---|
| 14 | E0 12 E0 7C/E0 F0 7C E0 F0 12 | E0 7C/E0 F0 7C | 84/F0 84 |

| Key No | Make Code | CTRL Key Pressed |
|---|---|---|
| 16 | E1 14 77 E1 F0 14 F0 77 | E0 7E E0 F0 7E |

**Note 1:**   When the left SHIFT key is held down, the F0 12/12 shift make/break codes are sent with the other scan codes. When the right SHIFT key is held down, F0 59/59 is sent. If both SHIFT keys are held down, both sets of codes are sent with the other scan codes.

**Note 2:**   Key 16 is not typematic. All associated scan codes occur on the make of the key.

# Scan Set 3 Codes

**Table F-3**   Scan Set 3, AT2 Scan Codes

| Key No. | Make Code | Break Code | Key State |
|---------|-----------|------------|-----------|
| 1 | 08 | | Make Only |
| 2 | 07 | | Make Only |
| 3 | 0F | | Make Only |
| 4 | 17 | | Make Only |
| 5 | 1F | | Make Only |
| 6 | 27 | | Make Only |
| 7 | 2F | | Make Only |
| 8 | 37 | | Make Only |
| 9 | 3F | | Make Only |
| 10 | 47 | | Make Only |
| 11 | 4F | | Make Only |
| 12 | 56 | | Make Only |
| 13 | 5E | | Make Only |
| 14 | 57 | | Make Only |
| 15 | 5F | | Make Only |
| 16 | 62 | | Make Only |
| 17 | 0E | | Typematic |
| 18 | 16 | | Typematic |
| 19 | 1E | | Typematic |
| 20 | 26 | | Typematic |
| 21 | 25 | | Typematic |
| 22 | 2E | | Typematic |
| 23 | 36 | | Typematic |
| 24 | 3D | | Typematic |
| 25 | 3E | | Typematic |
| 26 | 46 | | Typematic |
| 27 | 45 | | Typematic |
| 28 | 4E | | Typematic |
| 29 | 55 | | Typematic |
| 30 | 66 | | Typematic |
| 31 | 67 | | Make Only |

**Table F–3**  Scan Set 3, AT2 Scan Codes (Continutation)

| Key No. | Make Code | Break Code | Key State |
|---------|-----------|------------|-----------|
| 32 | 6E | | Make Only |
| 33 | 6F | | Make Only |
| 34 | 76 | | Make Only |
| 35 | 77 | | Make Only |
| 36 | 7E | | Make Only |
| 37 | 84 | | Make Only |
| 38 | 0D | | Typematic |
| 39 | 15 | | Typematic |
| 40 | 1D | | Typematic |
| 41 | 24 | | Typematic |
| 42 | 2D | | Typematic |
| 43 | 2C | | Typematic |
| 44 | 35 | | Typematic |
| 45 | 3C | | Typematic |
| 46 | 43 | | Typematic |
| 47 | 44 | | Typematic |
| 48 | 4D | | Typematic |
| 49 | 54 | | Typematic |
| 50 | 5B | | Typematic |
| 51 | 5C | | Typematic |
| 52 | 64 | | Typematic |
| 53 | 65 | | Make Only |
| 54 | 6D | | Make Only |
| 55 | 6C | | Make Only |
| 56 | 75 | | Make Only |
| 57 | 7D | | Make Only |
| 58 | 7C | | Typematic |
| 59 | 14 | F0 14 | Make/Break |
| 60 | 1C | | Typematic |
| 61 | 1B | | Typematic |
| 62 | 23 | | Typematic |
| 63 | 2B | | Typematic |
| 64 | 34 | | Typematic |
| 65 | 33 | | Typematic |
| 66 | 3B | | Typematic |
| 67 | 42 | | Typematic |

**Table F–3**   Scan Set 3, AT2 Scan Codes (Continuation)

| Key No. | Make Code | Break Code | Key State |
|---------|-----------|------------|-----------|
| 68 | 4B | | Typematic |
| 69 | 4C | | Typematic |
| 70 | 52 | | Typematic |
| 71 | 5A | | Typematic |
| 72 | 6B | | Make Only |
| 73 | 73 | | Make Only |
| 74 | 74 | | Make Only |
| 75 | 12 | F0 12 | Make/Break |
| 76 | 1A | | Typematic |
| 77 | 22 | | Typematic |
| 78 | 21 | | Typematic |
| 79 | 2A | | Typematic |
| 80 | 32 | | Typematic |
| 81 | 31 | | Typematic |
| 82 | 3A | | Typematic |
| 83 | 41 | | Typematic |
| 84 | 49 | | Typematic |
| 85 | 4A | | Typematic |
| 86 | 59 | F0 59 | Make/Break |
| 87 | 63 | | Typematic |
| 88 | 69 | | Make Only |
| 89 | 72 | | Make Only |
| 90 | 7A | | Make Only |
| 91 | 79 | | Make Only |
| 92 | 11 | F0 11 | Make/Break |
| 93 | 19 | F0 19 | Make/Break |
| 94 | 29 | | Typematic |
| 95 | 39 | | Make Only |
| 96 | 58 | | Make Only |
| 97 | 61 | | Typematic |
| 98 | 60 | | Typematic |
| 99 | 6A | | Typematic |
| 100 | 70 | | Make Only |
| 101 | 71 | | Make Only |
| 102 | 7B | | Typematic |

# Index

# E